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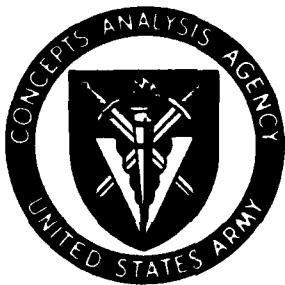
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# **MANPOWER TRADE-OFF METHODOLOGY (MTM)**

STUDY REPORT  
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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The MTM study consists of an analysis of the systems and procedures by which manpower trade-offs needed to accommodate new materiel systems and force structure changes are developed and transmitted to manpower managers for an analysis of impact and supportability. The report consists of four chapters. Chapter 1 provides introductory material and background. Chapter 2 contains a discussion of the current systems and procedures used to generate manpower trade-off information and provide that information to manpower managers. Chapter 3 discusses prescriptive measures to improve the systems and procedures			

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together with alternative systems that have been formulated. The final chapter presents the major observations of the study.

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MANPOWER TRADE-OFF METHODOLOGY (MTM)

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14 MAY 1981

CS CA-RQP

SUBJECT: Manpower Trade-Off Methodology Study

Deputy Chief of Staff for Personnel  
Department of the Army  
ATTN: DAPE-MB  
Washington, DC 20310

1. Reference letter, DAPE-MBC, 30 January 1981, SAB. That letter directed the US Army Concepts Analysis Agency (CAA) to conduct a study of the systems and procedures for providing manpower managers with information needed to determine the impact and supportability of proposed manpower trade-off actions.
2. Attached is our analysis of Army procedures and systems that both generate manpower trade-offs and transmit required information to manpower managers. This study report discusses the current system, suggests management actions to correct specific problems, and proposes alternative procedures to improve the ability of managers to respond to questions regarding manpower supportability.
3. Certain corrective measures recommended in this report are already underway. Others can be started immediately, at little cost, to improve the availability, quality and timeliness of manpower trade-off information.

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A handwritten signature in black ink, appearing to read "Edward B. Atkeson".

EDWARD B. ATKESON  
Major General, USA  
Commanding

## SUMMARY

1. PURPOSE. The purpose of the Manpower Trade-off Methodology (MTM) Study, as stated in the 30 January 1981 directive (Appendix B), is to identify systems and procedures that will provide manpower managers with information needed for determining the impact and supportability of proposed manpower trade-off actions required to accommodate force structure and materiel system changes.

## 2. BACKGROUND

a. During the current period of rapid force modernization, Army manpower managers are planning for the introduction of many new materiel systems and new organizational structures. With some exceptions, the new materiel systems and organizations planned for introduction will result in increased numbers of personnel needed to operate and support the equipment or an increase in skill levels. Constraints on the Army's end strength authorizations require that manpower needed to support the introduction of new materiel and organizational concepts be provided by programming concomitant manpower reductions elsewhere in the force structure and/or retraining available personnel in new skills. Retrainability of available personnel into higher skill levels is an additional factor which must be considered when planning for manpower reallocations to accommodate new systems.

b. While force structure managers maintain end strength levels constant by balancing authorizations at a highly aggregated level of detail, manpower and personnel managers must plan personnel reallocations at the grade, branch, military occupational specialty (MOS), and specialty skill identifier (SSI) levels of detail. This planning must be accomplished sufficiently early in the materiel development process to allow manpower affordability determinations to affect acquisition and design decisions. The manpower manager must be able to input quantitative forecasts of the impacts of proposed manpower reallocations to the decisionmaking process. Current procedures do not provide trade-off information to manpower/personnel/training managers which is adequate to forecast the resource implications of the introduction of new materiel systems or changes to organizations.

c. Current Department of Defense (DOD) directives require that the Army identify tradeoffs and analyze the affordability of new materiel systems at key decision milestones within the Life Cycle System Management Model (LCSMM). The requirement to perform similar analyses for other types of program changes is not so explicitly defined. It is apparent that the introduction of new materiel systems cannot be analyzed to determine manpower impacts in isolation from other new or revised programs, such as force structure changes, which are also competing for scarce and constrained manpower assets. As a result, it is essential that all new or revised programs which cause increased manpower

requirements must be analyzed in conjunction with each other to determine the overall impact on manpower requirements and availability.

3. KEY DEFINITIONS. It is important that the terms manpower affordability and manpower supportability be clearly understood. DOD directives and Army regulations use the term affordability almost exclusively. Yet affordability and supportability are not the same consideration. For the purposes of this study report, manpower affordability is defined as the ability to program tradeoffs, if required, within the end strength structure of the Army so that the new program will have adequate manpower authorized without exceeding constraints. Manpower supportability, on the other hand, is defined as the ability of the Army to provide sufficient manpower resources to actually implement the program. When the question of affordability is raised, the Army must determine if sufficient manpower spaces can be authorized for that program within the force structure allowance. When the question of supportability is raised, the Army must determine whether the spaces made available within the force structure can actually be manned.

4. SCOPE. This study places analytic emphasis on the change processes for the identification, development, and approval of manpower tradeoffs, the reasons why such tradeoffs are necessary, and the systems and procedures by which manpower trade-off information is provided to the Office of the Deputy Chief of Staff for Personnel (ODCSPER) for use in supportability analysis. The MTM Study consisted of an analysis of HQDA, US Army Training and Doctrine Command (TRADOC), and US Army Soldier Support Center - National Capital Region (SSC) policies, regulations, procedures, and automated systems involved in the development and use of manpower trade-off information.

5. APPROACH. Three key phases of the current system for developing and utilizing manpower trade-off information are identified, together with the linkages and subsystems involved in the flow of this information through the system. These phases and key elements of each are defined in detail through factfinding interviews and a literature search of applicable documents. Process flowcharts of the systems and their interrelationships were constructed and analyzed to assess the sufficiency of the processes and linkages and the adequacy of time-phasing. The phases and linkages studied are:

- a. Development of manpower requirements and tradeoffs, including TRADOC and HQDA level processes.
- b. Change approval processes, including development of the Program Objective Memorandum (POM) and the Defense Systems Acquisition Review Council (DSARC).
- c. The use of trade-off information in manpower supportability analysis.

6. PROBLEMS AND CORRECTIVE ACTIONS. The analysis of current procedures for providing manpower trade-off information to ODCSPER confirms the basic problem outlined in the study directive. The Army does develop manpower tradeoffs associated with new or revised programs, but that information is not transmitted in sufficient detail to ODCSPER. A summary of problems found to be inherent in current procedures, together with prescriptions for management actions to correct the problem are shown below.

- a. The Personnel Structure and Composition System (PERSACS) lacks data on manpower requirements and tradeoffs for equipment modernization. The PERSACS output provided to ODCSPER contains grade, MOS, and SSI projections representing the changes programmed to occur in the Army force structure through the end of the program years. This data, however, does not contain any new manpower requirements and tradeoffs needed for the integration of new materiel systems into the force structure. This problem has been previously recognized by HQDA and the capability to apply this data to PERSACS is currently being developed. The PERSACS to be computed in October 1981 should contain manpower requirements for new systems for which a basis of issue plan (BOIP) has been prepared.
- b. Organizational changes, those changes which result from changing the internal composition of Army units, do not have resource requirements and associated tradeoffs developed and programmed until after approval of the change and dissemination to implementing commands. This results in delay in implementation and, in many cases, a failure to implement since the Army cannot program the necessary resources. This problem was studied and alternatives suggested in the US Army Concepts Analysis Agency (CAA) study report, "Implementation of Change (IC Study)," CAA-SR-80-5. Implementation of corrective action will be integrated into the program to standardize Army units on a worldwide basis.
- c. Aggregate level factoring in PERSACS produces considerable distortion in grade and MOS projections during the program years. The growing deviation between the Table of Organization and Equipment (TOE), the requirements document, and the Modified Table of Organization and Equipment (MTOE) (the authorization document for many units) necessitated development of an estimating technique called factoring. Factoring in the PERSACS creates an estimated grade and MOS authorization for any projected force structure change which has not yet been documented with an MTOE. Analysis has indicated that this estimation technique creates significant distortions of the need for manpower by grade and MOS in the program year timeframe. Since the program to standardize all MTOE to the TOE will eliminate, in most cases, the divergence between these two documents, factoring should be eliminated for standardized units and the PERSACS projections for grade and MOS should be based on the TOE statement of grade and MOS requirements.
- d. The PERSACS data provided to ODCSPER for supportability analysis displays significant turbulence in grade and MOS projections. PERSACS

is updated at least four times per year and it has been demonstrated that significant fluctuations occur from one PERSACS output to the next. This results in an instability of supportability determinations since the grade and MOS projections may vary significantly as a result of this fluctuation. These variations between grade and MOS requirements may alter the results of the analysis of manpower supportability of a given functional area, as well as affect recruitment, training, and distribution plans to a significant degree. This fluctuation in the PERSACS is caused by decisions at HQDA and major commands (MACOM) which result in changes being programmed with effective dates occurring earlier than is feasible for manpower and logistics systems to respond. HQDA should consider not making routine force structure changes effective prior to the second program year, unless they are directed from the Office of the Secretary of Defense (OSD) or higher level.

e. The time required for data analysis at HQDA and MACOM levels is excessive and results in delays in document submission and response time. The vast amounts of data which must be manually processed at many points in the system result in delays in actions which must be taken to prepare MTOE documents, supportability analyses, and other manpower planning documents. There are at least two areas where increased automation would result in decreased analysis time. First, since the standardization program referred to earlier will result in MTOE modeled exactly on the TOE, there is no longer any need for MACOM to analyze TOE changes to determine how they should be applied to the MTOE in that command. All TOE changes should be automatically top loaded in The Army Authorization Document System (TAADS), and the resulting MTOE changes distributed to the MACOM. Second, the PERSACS could be modified to produce an additional output which shows only the changes in grade and MOS projections since the previous PERSACS. This differential PERSACS output would highlight the changes for manpower managers and allow a quicker response to questions regarding supportability.

f. The data base used for supportability analysis does not reflect all changes as developed in the Total Army Analysis (TAA) and the POM. The PERSACS is the key linkage between change development and approval processes and the manpower management processes, including supportability analyses. Because of the lack of equipment modernization requirements and the distortions caused by factoring, ODCSPER has not considered the PERSACS to be accurate enough during the program years to base supportability analyses on PERSACS data. As a result, the data base used for supportability analyses has been built by obtaining program year manpower changes from other best available sources, usually TRADOC recommendations. Thus, the force structure changes developed in Total Army Analysts (TAA) and integrated into the program force structure do not serve as the sole basis for supportability analyses. Once the PERSACS has been improved to include manpower requirements for new materiel systems and to eliminate the distortions caused by factoring, this objection will be overcome. At that point, PERSACS data should be the primary source of the data used in conducting supportability

analyses, thus aligning the supportability determinations with the affordability determinations made in TAA-POM.

7. ESSENTIAL ELEMENTS OF ANALYSIS. The EEA which were required during the study and which guided its conduct are stated and discussed below:

a. What are the various types of changes which drive manpower reallocations? What are their sources and when do they occur? This study identified three major types of change which might result in increased or redistributed manpower. These are (1) force structure changes in which units are activated, inactivated, or reorganized in the programmed force structure; (2) organizational changes in which the internal composition of units is altered, and (3) the development of new materiel systems. There are many possible originators of force structure changes. The vast preponderance of these changes however, originate either from HQDA ODCSOPS or from TRADOC. TRADOC develops recommended force structure changes which can originate and be forwarded to HQDA at any time during the year. HQDA ODCSOPS develops force structure changes based on changing guidance, objectives, and constraints. The majority of these changes are developed during the Total Army Analysis (TAA) which occurs annually and produces a program force structure for input to POM development each September. TRADOC-recommended force structure changes must be integrated into the TAA process in order to be approved during the resource allocation process. Organizational and new materiel system changes, while they can be initiated elsewhere, usually issue from TRADOC, the Army's combat developer. Organizational and materiel system changes can originate and be approved at any time during the year.

b. When and where are manpower authorization tradeoffs identified for each of the various types of changes? Manpower tradeoffs for organizational (TOE) changes are not currently being identified anywhere in the system until after those changes have been approved and disseminated to the MACOM for approval. This is a major problem since these changes, when aggregated on a semiannual basis in the Consolidated Change Table (CCT), can have a significant impact on the MACOM. This problem was addressed by the IC Study, and implementation of the study results will cause those changes to be considered along with other resource demanding changes prior to approval of the organizational change. The Manpower Analysis Paper which presents TRADOC recommendations for manpower requirements and the associated tradeoffs for new materiel systems is submitted to HQDA 60 days prior to each major milestone of the Life Cycle System Management Model. Development of force structure tradeoffs, which, in turn, determine manpower tradeoffs, is an integral part of the TAA process. TAA is conducted by HQDA and culminates in the development of a base force structure in September of each year. For those force structure studies being accomplished within TRADOC, recommended tradeoffs must be submitted along with the study. These recommendations are considered during the TAA process and integrated into the program force as appropriate.

c. What are the procedures for providing manpower trade-off data to ODCSPER for affordability assessments? Manpower trade-off data are developed as a result of the force structuring process which occurs during the TAA-POM development cycle. The program force contains unit level tradeoffs which are translated into manpower tradeoffs at the grade, MOS, and SSI level by the PERSACS. The PERSACS is the vehicle by which these data are provided to ODCSPER. Since there are, however, inaccuracies in the PERSACS process which limit its use for this purpose, ODCSPER and SSC must gather data from alternate sources. This unstructured procedure is not adequate, since there is no guarantee that the data gathered are fully consistent with the changes in the program force. Lack of a satisfactory procedure for providing manpower trade-off data is the problem which generated the MTM Study.

d. What data are required by ODCSPER to perform required affordability assessments? SSC performs the required assessments of manpower supportability for ODCSPER. SSC requires data representing the tradeoffs contained in the programmed force structure. The specific data required are all changes which realign military manpower requirements at the grade, MOS, and SSI level of detail from the current year through the final program year. Since the SSC analyzes only the manpower implications of changes to TOE units, they need only receive data on military manpower changes. To fulfill its requirements fully, however, ODCSPER also needs information specifying the impact of new or revised programs on civilian manpower. Data regarding civilian manpower requirements for new materiel systems is available at the needed level of detail in the Modernization Resource Information Submission (MRIS) submitted each January by the MACOM.

e. What synchronization is required between the processes for generating and approving changes and the processes for managing manpower? Does it exist? The answer to this question must be limited to the area of concern of this study, i.e., manpower changes which must be programmed for organizational, force structure, and materiel system changes. It is essential that manpower planning be accomplished utilizing data which represent the best information available regarding the changes programmed to occur in the force structure. The programmed force structure is altered throughout the year as a result of the annual TAA, POM development, program approval cycle. Additional synchronization is required with the materiel system change process specified by the Life Cycle System Management Model. There is, however, a lack of synchronization which occurs for several reasons. First, manpower planning and a determination of supportability does not occur on an integrated basis for organizational (TOE) changes. TOE changes are approved on an individual basis and promulgated for implementation without an analysis of their total manpower impact. Second, synchronization between supportability analysis and the programmed force structure is lacking, since the manpower data computed by the PERSACS does not accurately represent the programmed changes at the unit level. Finally, there is a lack of synchronization between those changes programmed for the force structure and

those for materiel systems since ASARC/DSARC scheduling is not linked to the POM development schedule.

8. OBSERVATIONS. The major observations of this study are as follows:

a. Manpower tradeoffs are necessitated by and developed within the force structure program as a result of organizational, force structure, and materiel system changes which either increase the requirement for manpower or alter the distribution of manpower between various skills. These changes emanate, for the most part, from either TRADOC or ODCSOPS, HQDA. The manpower tradeoffs which result are finalized within the TAA-POM development process at HQDA. This process for integrating change into the Army program results in tradeoffs being programmed at the unit level. These unit level changes are translated into revised manpower requirements at the grade, MOS, and SSI level of detail by the PERSACS.

b. The major omission from the trade-off development process is that, organizational, or TOE, changes are not analyzed for manpower impact nor are tradeoffs developed for them. This problem should be overcome when the recommendations of the IC Study are implemented along with the unit standardization program.

c. The PERSACS is the appropriate vehicle for the provision of manpower requirements and associated tradeoffs to ODCSPER and the SSC. Use of PERSACS data for supportability analysis would link this analysis directly to the best source of manpower change information, the program force structure developed in the TAA-POM process. Use of these data would ensure that there is no duplication of spaces traded off for a new program and would provide an audit trail of force structuring actions in the POM. Further, the PERSACS provides these data at the level of detail needed. The PERSACS must, however, be improved before it can be used for this purpose. The needed improvements are either under development now or would be relatively simple and inexpensive to accomplish. The two principal improvements needed are the inclusion of manpower requirements for new equipment and the reduction of factoring distortions. Once these improvements are made, the SSC should adopt the PERSACS as the primary source of data for supportability analysis. There are a number of other improvements to current processes and systems which would increase the accuracy and timeliness of the manpower information needed for supportability analysis. Increased automation of the application of changes to TAADS and of the analysis of PERSACS output would reduce both workload and analysis time. Limitations on near-term changes to the force structure would reduce turbulence in manpower planning data and provide better manpower support to the MTOE units.

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MANPOWER TRADE-OFF METHODOLOGY (MTM)

CHAPTER 1

INTRODUCTION

1-1. STUDY PURPOSE. The Manpower Trade-off Methodology (MTM) Study was generated by a concern within the Office of the Deputy Chief of Staff for Personnel (ODCSPER) that information available to them is not sufficient for performance of their assigned function of analyzing the impact of new programs on Army manpower. Army end strength constraints require that the manpower needed to support the introduction of new materiel systems and force structure changes be offset by concomitant manpower reductions elsewhere in the force structure. While the added manpower requirements of new programs are readily available to ODCSPER, the offsets to the force structure (tradeoffs) are not currently being provided at the level of detail required. The purpose of the MTM Study is to identify systems and procedures that will provide manpower/personnel managers with information needed for determining the impact and supportability of proposed manpower trade-off actions required to accommodate force structure and materiel system changes.

1-2. BACKGROUND. This study effort was requested by ODCSPER as it became apparent that current procedures for evaluating the manpower impact of new or revised programs are not adequate for the upcoming period of rapid force modernization. It is but one of several initiatives taken by the manpower community to enhance capabilities in the area of manpower and personnel planning.

a. Army manpower managers are planning for the introduction of many new materiel systems and new organizational structures. With some exceptions, the new materiel systems and organizations planned for introduction will result in increased numbers of personnel needed to operate and support the equipment or an increase in skill levels. Constraints on the Army's end strength authorizations require that manpower needed to support the introduction of new materiel systems and organizational concepts be provided by programming concomitant manpower reductions elsewhere in the force structure and/or retraining available personnel in new skills. Retrainability of available personnel into higher skill levels is an additional factor which must be considered when planning for manpower reallocations to accommodate new systems.

b. While force structure managers maintain end strength levels constant by balancing authorizations at a highly aggregated level of detail, manpower and personnel managers must plan personnel reallocations at the grade, branch, military occupational specialty (MOS), and specialty skill identifier (SSI) levels of detail. This planning must be accomplished sufficiently early in the materiel development process

to allow manpower supportability determinations to affect acquisition and design decisions. The manpower manager must be able to input quantitative forecasts of the impacts of proposed manpower reallocations to the decisionmaking process. Current procedures do not provide trade-off information to manpower/personnel/training managers which is adequate to forecast the resource implications of the introduction of new materiel systems or changes to organizations. In addition, current procedures do not document an audit trail sufficient to preclude duplication of trade-offs. Any solutions proposed by this study must address and, if possible, solve these shortcomings.

c. Current Department of Defense (DOD) directives require that the Army identify tradeoffs and analyze the affordability of new materiel systems at key decision milestones within the Life Cycle System Management Model (LCSMM), which specifies procedures and requirements for DOD systems development. The requirement to perform similar analyses for other types of program changes is not so explicitly defined. It is apparent that the introduction of new materiel systems cannot be analyzed to determine manpower impacts in isolation from other new programs which are also competing for scarce and constrained manpower assets. As a result, it is essential that all new or revised programs which result in increased manpower requirements must be analyzed in conjunction with each other to determine the overall impact on manpower requirements and availability. For the purpose of this study, new or revised programs are categorized as follows:

(1) Force Structure Changes. These are changes in which the overall composition of the Army force structure is changed by activating new units, inactivating existing units, or revising the structure of existing units by changing the authorized level of organization (ALO) of those units in accordance with the appropriate levels of the Table of Organization and Equipment (TOE).

(2) Organizational Changes. These are changes which are applied to the basic organizational configuration of US Army units. In this case, we are concerned primarily with changes to the TOE which are developed and published by the US Army Training and Doctrine Command (TRADOC). This type of change results in alterations to the internal structure of TOE units rather than adding and deleting units from the force structure.

(3) New Materiel Systems. The introduction of new materiel systems during the force modernization process frequently results in increased manpower requirements. Further, some new systems replace older systems to be phased out of the structure while others are new types of capabilities and are additive to the structure. Both types, however, usually result in increased manpower requirements. Introduction of new materiel systems may result in both organizational and force structure changes.

1-3. KEY TERMS. It is important that the terms manpower affordability and manpower supportability be clearly understood. DOD directives and Army regulations use the term affordability almost exclusively. Yet affordability and supportability are not the same consideration. For the purposes of this study report, affordability is defined to mean the ability to program trade-offs, if required, within the end strength structure of the Army so that the new program will have adequate manpower authorized without exceeding constraints. Supportability, on the other hand, is defined to mean the ability of the Army to provide sufficient manpower resources to actually implement the program. When the question of affordability is raised, the Army must determine if sufficient manpower spaces can be authorized for that program within the force structure allowance. When the question of supportability is raised, the Army must determine whether the spaces made available within the force structure can actually be manned. The elements which must be analyzed to answer the supportability question will be addressed in Chapter 2 of this report.

1-4. THE PROBLEM. ODCSPER has not been able to identify manpower/personnel spaces which have been traded off in the force structure to accommodate the introduction of new materiel or changes in organizations independent of new materiel systems. Manpower, personnel and training managers need this information for determining resource impacts and supportability of these proposed trade-off actions. Supportability analyses cannot be made without the trade-off information identifying manpower and personnel implications.

1-5. OBJECTIVES. The objectives of this study are to:

- a. Nominate appropriate systems and procedures to ensure that ODCSPER is provided with information that identifies the manpower/personnel space tradeoffs which will allow determination of the manpower affordability of proposed materiel and force structure changes.
- b. Identify data that will allow manpower and personnel managers in ODCSOPS and ODCSPER to:
  - (1) Determine the reasonableness (accuracy) of the new requirements by grade and MOS/SSI (for military spaces--total Army).
  - (2) Identify and quantify the changes both in terms of total spaces (military and civilian) and the MOS/SSI and grade level of detail for military spaces only.
  - (3) Assess the training, grade structure, and other manpower personnel management impacts resulting from the trade-off actions.
- c. Define a mechanism to provide an audit trail of manpower traded off to ensure the spaces given up are traded off only once.

1-6. SCOPE. The study will examine:

- a. The procedures and supporting information systems now used by force structure and manpower managers in determining, recording and communicating manpower space tradeoffs to accommodate new manpower requirements.
- b. The procedures and supporting information systems now used for assessing the affordability of new manpower requirements.
- c. The manner in which manpower trade-off data impact on the decision-making process for both materiel acquisition and force structuring.

1-7. ASSUMPTIONS. The following major assumptions were established:

- (1) The manpower needed to operate and support new materiel systems, as stated in appropriate requirements documents, is valid.
- (2) The number and composition of unit requirements stated in approved force structures are valid.

1-8. ESSENTIAL ELEMENTS OF ANALYSIS (EEA). As stated in the tasking directive, the EEA are:

- a. What are the various types of changes which drive manpower reallocations? What are their sources and when do they occur?
- b. When and where are manpower authorization tradeoffs identified for each of the various types of changes?
- c. What are the procedures for providing manpower trade-off data to ODCSPER for affordability assessments?
- d. What data are required by ODCSPER to perform required affordability assessments?
- e. What synchronization is required between the processes for generating and approving changes and the processes for managing manpower? Does it exist?

1-9. METHODOLOGY. The work flow and methodology of the MTM Study, from initiation of the study to publication of the study report, are depicted in Figure 1-1.

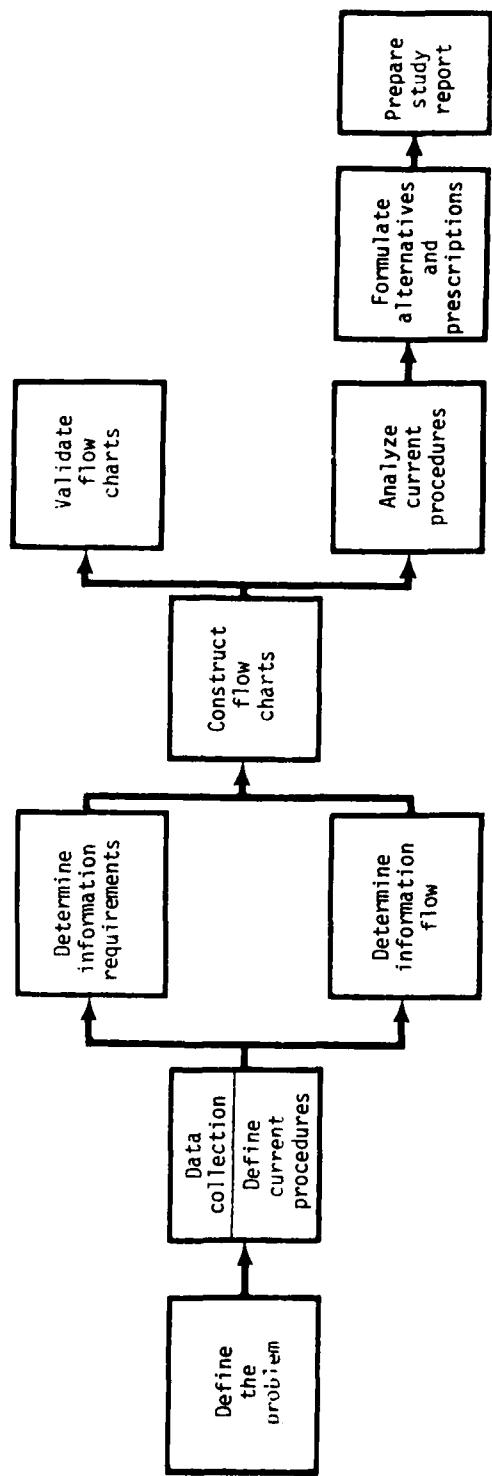


Figure 1-1. Study Methodology

a. The first phase of the study consisted of steps taken to define the problem more completely and to gather information about the current processes. This was accomplished through literature search and interviews with personnel who were involved in generating and using manpower trade-off data. Interviews were conducted with members of the HQDA Staff, HQ TRADOC Staff, and representatives of the Soldier Support Center (SSC). Information gained during these interviews provided a clear understanding of the problems involved and served to gain knowledge of change processes, information requirements, the procedures for transferring information, the roles of the various elements involved, and the manner in which supportability analysis is conducted.

b. The next phase of the study consisted of efforts to describe the generation and flow of manpower trade-off data through the affordability and supportability analyses by the construction of process flowcharts. Program changes which result in additional manpower requirements were categorized and the information flow for each was depicted in these flowcharts. In order to provide quality control checks on the study, completed flowcharts were presented to study sponsor personnel for validation. This phase of the study served to provide a clear, readily understandable, visual description of the processes involved; this understanding was essential to subsequent analysis.

c. The third phase of the study consisted of steps to analyze the current processes for determining whether required manpower trade-off information is being generated and, if so, where breakdowns in the information flow might be occurring and why. Once causes of the problem were identified, alternative processes and information flows were formulated and again constructed in flowchart format. These alternatives were also provided to the study sponsor and the Technical Review Board of CAA to ensure their feasibility and worth-- another quality control procedure.

d. During the final phase of the study, the study report was prepared and published.

1-10. CONTENTS OF THE REPORT. The following chapters presents the results of this management study. Chapter 2 contains a discussion of the current systems and processes used to generate and transmit manpower trade-off information and its uses in determining manpower affordability and supportability. Chapter 3 discusses management prescriptions and alternative system procedures for improvement of the quality and flow of information which are necessary to meet each of the study objectives. The final chapter presents the major observations of the study and addresses each of the EEA stated in paragraph 1-8.

## CHAPTER 2

### CURRENT PROCEDURES

2-1. INTRODUCTION. The Manpower Trade-off Methodology (MTM) Study resulted from concern within ODCSPER that there is not sufficient information available to perform required analyses of the manpower impact of new or revised force structure and materiel system programs. The processes, information flows, and analyses performed are complex and involve complicated interrelationships between organizations and automated data bases. In order to understand fully the descriptions of these processes and interrelationships which follow later in this chapter, it is useful to discuss the types of changes involved, outside factors which constrain manpower, and the need for affordability and supportability analysis.

a. Types of Change. In Chapter 1 the types of changes pertinent to this study were identified as force structure changes, organizational changes and new materiel systems. For the purpose of tracking the flow of information, however, four categories need to be examined. New materiel systems need to be examined in two categories--materiel systems which generate new organizations and materiel systems which are integrated into existing organizations. It should be remembered, however, that all changes which alter the distribution of manpower between MOS are of interest in manpower supportability analyses. For this reason, all changes causing redistribution of manpower must be provided to ODCSPER at the grade and MOS level of detail whether the total manpower is increased or not.

(1) Force structure changes (those changes which alter the composition of the Army force structure) are the result of several change processes, including: guidance external to the Army; varying internal Army objectives, and increasing levels of technology. Overall Army responsibility for force structuring resides in DCSOPS. A memorandum of understanding between HQDA and TRADOC (see Appendix C, Bibliography) assigns to TRADOC the responsibility to conduct manpower analyses and develop tradeoffs for any new program developed by TRADOC which results in increased manpower requirements. This includes such force structuring actions as Division 86. There are two principal sources of force structure changes within the Army: HQDA (DCSOPS) and TRADOC. Other HQDA staff agencies and Major Army Commands (MACOM) may recommend force structure changes within their areas of proponency. Force structure changes are approved during the development of the Program Objective Memorandum (POM) and provided to appropriate MACOM for implementation.

(2) Organizational changes (those which alter the internal structure of individual units) result primarily from changes in operational doctrine, changing levels of technology, changing missions and functions, and varying Army objectives. Overall Army responsibility for

organizational changes again resides within ODCSOPS, HQDA. Responsibility for developing organizational changes for requirements stated in Table of Organization and Equipment (TOE) type units rests with TRADOC. Responsibility for developing organizational changes for nontactical, or Table of Distribution and Allowances (TDA) units, is assigned to the parent MACOM. Approval for TOE changes is currently accomplished external to development of the POM as discussed in the IC Study Report, CAA-SR-80-5. As a result of the IC Study and other ongoing actions, however, the approval process will be altered and organizational changes which require additional resources will be approved in concert with other new programs competing for resources during POM development.

(3) New materiel systems which generate new organizations are those items for which there are no TOE organizations which can be suitably adapted without major restructuring. These items generally represent new capabilities rather than enhancement of existing capabilities. They may be intended to accomplish missions which are not currently assigned to an existing TOE organization. These systems are developed to take advantage of increased technology or as a result of changes in doctrine or objectives. They may also be generated to counter advances in the capabilities of other nations. Regardless of which Army agency is designated as the materiel developer of an item, TRADOC, as the combat developer, is responsible for identifying the force structure implications of the system to include identification of recommended organizational, equipment and manpower tradeoffs. HQDA DCSOPS has overall Army responsibility for review and approval of TRADOC recommendations and the integration of those recommendations into the overall force structuring process. Approval authority for a new system to proceed through the various stages of its life cycle varies depending on its designation as a major or nonmajor program. Approval authority for major programs generally rests at DOD level. Nonmajor programs are usually approved at HQDA level.

(4) New materiel systems integrated into existing units are items for which existing TOE are readily adapted. These systems are usually intended to replace existing systems or fit readily within the mission areas of current TOE. Development and approval responsibilities are the same as discussed in paragraph (3) above.

b. Constraints. The principal constraint within which manpower and force structure managers must work is the Force Structure Allowance (FSA). The FSA is that portion of the Congressionally authorized and DOD distributed military manpower which can be allocated to Army force structure. The FSA is calculated by subtracting manpower allocated to trainee, reimbursable, and trained individuals (transients, patients, prisoners, students, cadets) categories from the total end year military manpower authorization. In other words it is that portion of the Army end strength authorization remaining after individuals not assigned to units are accounted for. The Army's total end strength is dictated by Congress and DOD. The FSA, however, is variable depending on the number

of people estimated to be needed in training, moving between units or in hospitals and confinement. Its size is computed annually in coordination between ODCSOPS, ODCS PER and the Military Personnel Center (MILPERCEN) and is based on force structure requirements determined during the TAA process and estimation by MILPERCEN of the size of the individuals account needed to support that force structure. Once the size of the FSA has been determined for a given fiscal year, manpower management and force structuring actions must stay within that ceiling. New or revised Army programs which would generate added manpower requirements over that ceiling must be offset by sufficient tradeoffs to ensure that the FSA is not exceeded. It should be pointed out that programs which do not result in added manpower requirements may indirectly generate the need for tradeoffs. Programs resulting in higher levels of equipment sophistication may require increased training time for operators and maintainers. Increased training duration results in an increase in the number of individuals in training at any given time. If the total Army end strength remains constant, as it generally does, the size of the FSA must be decremented corresponding to the increase in the number of individuals in training. This results in a decrease in manpower allocated to units; i.e., manpower in units is traded off for increased training time.

c. Affordability. Since the manpower which can be allocated to the Army force structure is constrained, as outlined above, there is a requirement to analyze the affordability of new or revised programs which would result in an overall increase in manpower requirements.

(1) The question which must be analyzed to determine if a new program is affordable is whether or not the Army can make sufficient manpower spaces available, within the computed force structure allowance, to operate, support or perform the new program. Since the FSA does not generally increase significantly over time, this nearly always requires that the needed spaces be programmed by reducing spaces allocated to existing programs within the force structure. In the case of a new capability which is replacing an existing capability, the needed spaces may be generated by the elimination of spaces devoted to the capability being reduced or eliminated.

(2) In any event, DOD Directive 5000.1, Major System Acquisitions, and DOD Instruction 5000.2, Major System Acquisition Procedures, require that the Army present affordability considerations and the identification of manpower tradeoffs needed for new materiel systems at each Defense Systems Acquisition Review Council (DSARC) meeting. Army Regulation (AR) 15-14, Army Systems Acquisition Review Council (ASARC), supports the DOD requirements by specifying the same considerations be presented to the ASARC. Chief of Staff Regulation (CSR) 5-5 established the HQDA Affordability Analysis and Review System to support this need. Finally, CSR 11-9, Policy for Resource Support of DA Directed Program Changes, requires that the HQDA proponent of a new or revised program will develop both the resources required and the source of those resources. Further, CSR 11-9 requires that these requirements and

tradeoffs will be reviewed by ODUSOPS and ODCSPER for impact prior to approval of the program.

d. Supportability. While the requirement for conducting affordability analyses is clearly stated in the above documents, the need for supportability analysis is not as explicitly covered. It might be inferred that an analysis of affordability should include supportability considerations, however, it is not clear that this is the case. What is clear is the need to analyze the supportability of new programs as well as the affordability. Clearly, it does little good to make spaces available in the force structure if they cannot be manned. The cost of doing so can be measured in dollars, in decreased readiness ratings and in lost opportunities. The dollar cost can be measured in terms of equipment procured but standing idle or operated at reduced capability due to lack of operators or maintainers. The readiness cost will result from the impact on readiness ratings of spaces authorized to units but not filled. Since any new program is designed to improve the overall combat power of the Army, force structure spaces which are not manned effectively prevent the realization of some other capability which enhances combat power; hence, the lost opportunity cost. So there is a valid need for ODCSPER to conduct early analyses of the planned redistribution of manpower which occurs during force modernization to ensure that manpower spaces are not allocated to programs which cannot be supported by personnel managers.

e. The remainder of this chapter describes the current processes and systems being used within the Army for developing the manpower information pertaining to new or revised programs, for making manpower allocation decisions, for conducting supportability analyses, and for transferring manpower information from the source of that information to the agency that actually conducts supportability analyses.

2-2. DEVELOPMENT OF MANPOWER REQUIREMENTS AND TRADEOFFS. On 14 December 1979 a memorandum of understanding (MOU) between HQDA and TRADOC was signed. This MOU established the separate and joint responsibilities of HQDA and TRADOC pertaining to Army force structure development. The responsibility for development, management and programming of the total Army force structure remained at HQDA. TRADOC was assigned the responsibility to analyze the affordability of evolving combat development products within constrained resources and to analyze constrained force structure alternatives in support of materiel system major milestone reviews. TRADOC Regulation 11-1 supports this responsibility by specifying that the identification of force structure tradeoffs be included in this manpower analysis whenever additional manpower would be required. Therefore, while other major commands may generate new programs in some instances, the preponderance of new manpower requirements and associated tradeoffs are originated within HQDA or TRADOC. Of the four categories of change previously discussed, force structure changes may originate within either HQDA or TRADOC while the other three categories generally come from within TRADOC.

a. Development of Recommended Tradeoffs. The TRADOC process for developing manpower tradeoffs to offset added manpower requirements is shown in Figure 2-1. The source of this diagram is TRADOC Regulation 11-1. This diagram depicts the development and flow of trade-off information at the schools, integrating centers and the headquarters of TRADOC and the final submission of a recommendation to HQDA (ODCSOPS). While it is not necessary to discuss each individual step in this process, several key points need to be made. Each of the functional areas listed in Table 2-1 is assigned to one of the schools within TRADOC. If the answer to the question asked in Step 4 of the diagram (Is additional manpower required?) is yes, then the appropriate school must perform Steps 5 through 9 to develop whatever tradeoffs are possible within the same functional area as the added manpower. Each integrating center within TRADOC is assigned the responsibility for a group of functional areas. If insufficient tradeoffs were developed at the school level, then the integrating centers must perform Steps 14 through 18 to propose additional tradeoffs within the group of functional areas under its purview. If the tradeoffs developed at the integrating center are still not sufficient, then a working group of integrating centers under the direction of the Combined Arms Combat Development Agency (CACDA) must perform Steps 19 through 25 to develop the additional tradeoffs necessary to completely offset the added manpower requirement. The recommended tradeoffs, which should by this point totally offset the requirement, are then forwarded to HQ TRADOC and, if acceptable, subsequently to HQDA ODCSOPS. This process applies to all of the categories of change discussed above, although the vast majority of organizational (TOE) changes developed within TRADOC do not have this process applied to them.

b. Development of Force Structure Changes. The HQDA process for developing force structure changes, including new manpower requirements and associated tradeoffs will be discussed as part of the TAA-POM process (paragraph 2-3 following).

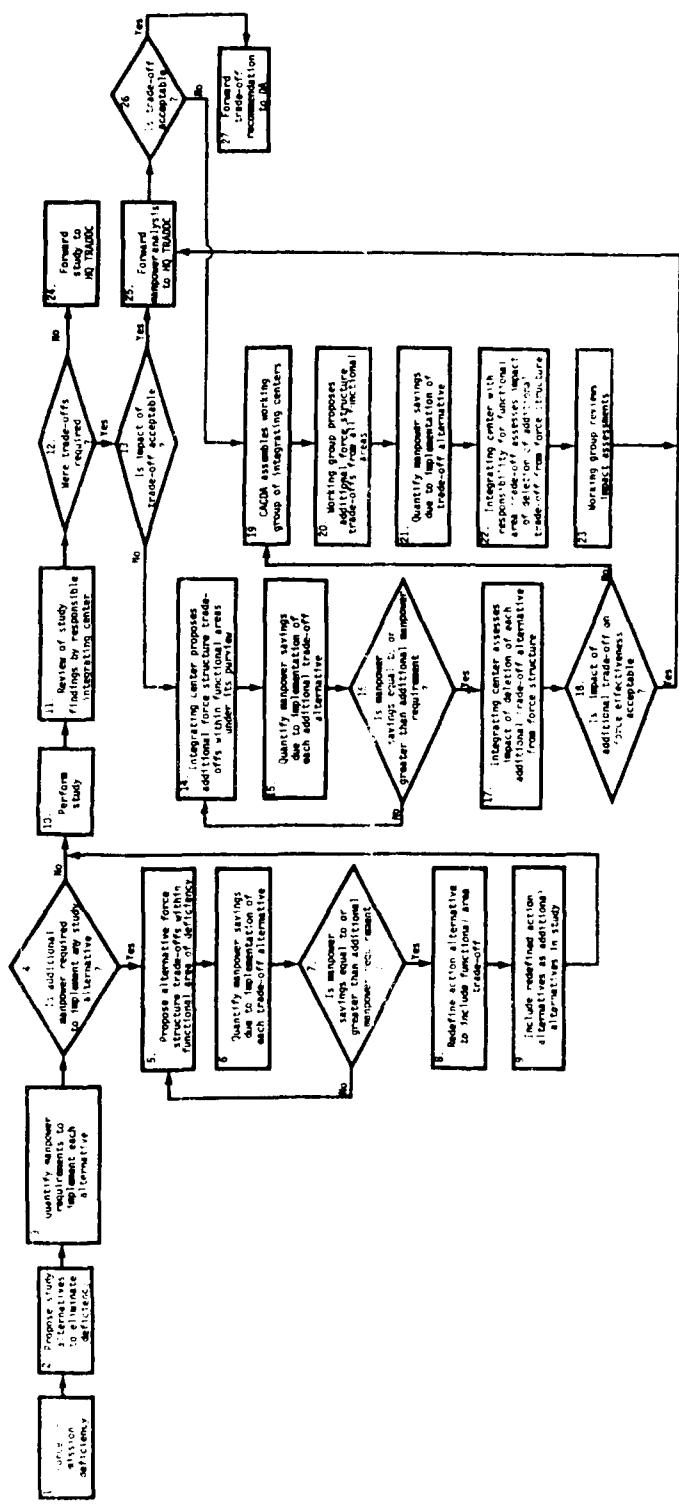


Figure 2-1. TRADOC Development of Manpower Tradeoffs

Table 2-1. TRADOC Functional Areas

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- Command, Control and Communications
- Intelligence, Surveillance, Reconnaissance, Target Acquisition/Electronic Warfare
- Combat Engineer
- Air Defense
- Fire Support
- Close Combat
- Other Combat Support
- Logistics
- Personnel and Administration

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c. Development of Organization Changes. Organizational changes are submitted by TRADOC to HQDA ODCSOPS, for staffing and for approval. Those changes with manpower and force structure implications are coordinated within ODCSOPS and ODCS PER for comment. In the case of TCE changes, regardless of manpower impact, those changes approved are returned to TRADOC for publication twice a year in the Consolidated Change Table (CCT) and distributed to the MACOM for implementation. No manpower impact of all the changes in the CCT is ever computed nor are resources programmed in the POM for implementation. Since no source of manpower to accomplish these actions has been identified, there has been no determination of the manpower tradeoffs necessary. (See the Implementation of Change Study Report for an in-depth analysis of this problem.)

2-3. TAA-POM PROCESS. The principal methodology used for developing programmed force structure is the TAA. This is the process by which changes to the number and types of units in the Army force structure are determined. Development of the Army Program Objective Memorandum (POM) is the basic decision process for allocating resources to the Army's highest priority programs and for determining the final programmed force structure. It is, in essence, the affordability analysis process during which programs are prioritized and determined to be affordable or not affordable. (If they are included in the POM, they are affordable.)

a. Total Army Analysis. The purpose of TAA is to determine, given a scenario, threat, and combat unit force structure, the number and type of combat support (CS) and combat service support (CSS) units required to optimize mission capability through the program years. The TAA process is depicted in Figure 2-2.

(1) Each year the US Army Concepts Analysis Agency is tasked to initiate the TAA process by conducting a computer assisted analysis. This analysis is based on DOD and Army guidance, a specified threat and scenario, the Army Force Planning Data and Assumptions (AFPDA) and the previous approved POM force. The first step performed is a computation of the deployment lift requirements for the combat force plus related logistical support weights using the Transportation Model (TRANSMO). Next, the combat force is simulated in a wargame utilizing the prescribed scenario and the theater level Concepts Evaluation Model (CEM) to determine sufficiency of the force and to generate combat workload data. The force is then rounded out with combat support and combat service support units, based on the combat force structure and the results of CEM using the Force Analysis Simulation of Theater Administrative and Logistic Support (FASTALS) Model. Another run of the TRANSMO may be required at this point to change the force deployment schedule in order to accommodate CS and CSS units. Finally, the total force is then compared with the previous POM force, using the unit data system (UDS), to match unit requirements as computed above with units already programmed in the force structure in order to determine units in excess of requirements or additional units that are required. The end product of the CAA analysis is the design force, a time-phased requirement for CBT, CS and CSS units by Unit Identification Code (UIC) together with the identified unit shortages/overages by type unit.

(2) The design force is provided to ODCSOPS in the July-August timeframe for validation by the Army Staff. Validation is a manual process which considers the design force within programming constraints such as manpower, dollars, recruitment, production capability, and competing contingencies. During this process, changes to the design force structure are recommended based on resource constraints and peacetime requirements. In essence, force structure tradeoffs are programmed, based on the TAA analysis, to accommodate new programs and changing constraints and guidance in order to realign the previously approved program force structure. Tradeoffs are not necessarily identified as the result of a specific new program, but are developed on an integrated basis such that the total number of manpower space increases less the total number of manpower space decreases do not result in exceeding the force structure allowance. Tradeoffs recommended by TRADOC to offset new programs may be considered by ODCSOPS in this process but are not necessarily the ones which are finally integrated into the resulting force structure.

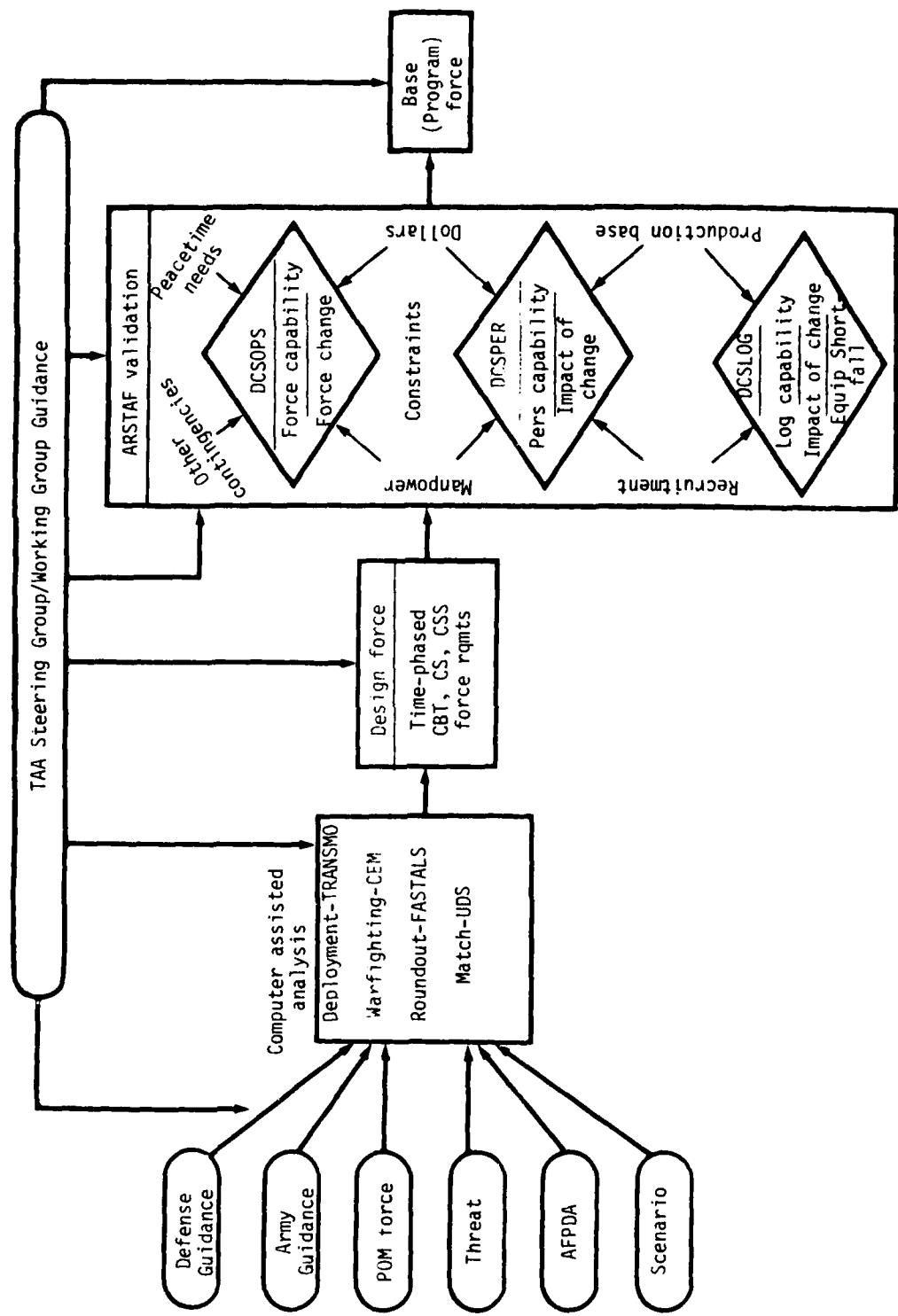


Figure 2-2. Total Army Analysis

(3) Throughout this entire process, the analysis is guided by a general officer level steering group. The final result of the analysis, when approved by this steering group, is a constrained force structure which contains the force requirements needed to accommodate new programs and current guidance and which is designated the base or program force. This force is entered into the Force Accounting System as the new master force (M-force) and serves as the basis for continuing POM development.

b. POM Development. The next phase is the development of the POM. The POM describes all aspects of Army programs which are designed to increase force readiness of the total Army. It highlights forces, manpower and materiel acquisition in considerable detail because of the high management interest in these resource areas. Publication of the POM formally transmits Army proposals for resource allocation to the Office of the Secretary of Defense. Detailed discussion of POM development is not needed for the purposes of this study report. An in-depth exposition of the POM development process can be found in the Planning, Programming, and Budgeting System (PPBS) Handbook published by the Director, Program Analysis and Evaluation, HQDA. A few pertinent points, however, need to be examined.

(1) Resource requirement inputs to POM development come from both the Army Staff and the MACOM. One of the primary inputs is the program force structure developed in TAA. The program force is a statement of how manpower, dollar and equipment resources need to be allocated to Army units--both Active and Reserve Components--in order to maximize force effectiveness within resource constraints. A subsequent input to the process, occurring in January, is the identification and explanation of resource requirements by each MACOM. This occurs in the Program Analysis and Resource Review (PARR). The PARR allows the MACOM to present its prioritized dollar, manpower, equipment and facility needs for all program years to accomplish its mission. It suggests command originated tradeoffs and, as a result, the program force is further refined and adjusted on the basis of command input during February and March.

(2) This entire process of developing the POM is the Army's methodology to analyze the affordability of programs. Existing programs are traded off to accommodate new programs within resource constraints. Those programs which have been traded off are those which have been determined by the Army to be nonaffordable. The POM reflects the Army's decisions on force structure and manpower tradeoffs. The force structure which is published in the POM reflects the only approved tradeoffs made to accommodate new programs. These tradeoffs are reflected as unit inactivations and reorganizations occurring throughout the program years.

(3) There is, however, further refinement of the POM force structure at DOD after submission of the POM. Program review at DOD, issue papers, the Program Decision Memorandum (PDM), Army reclamas and the Amended Program Decision Memorandum (APDM) all may result in subsequent adjustment of the force structure. By the time the APDM is published in

August or September finalizing the program force, the cycle has already begun again as the next TAA analysis is underway. Thus the process is one of continual refinement with tradeoffs being developed throughout the year. At any time throughout the year, however, the best, and only valid, source of manpower and force structure changes (tradeoffs) is the force structure being programmed in the TAA-POM process.

2-4. ASARC/DSARC PROCESS. The other major decisionmaking system of interest is the management system for the development and production of new systems. This system is outlined in DA Pamphlet 11-25, Life Cycle System Management Model (LCSMM). The LCSMM applies to both major and nonmajor systems with the primary differences being the management documentation used and the level at which program decisions are made. Decisions regarding major systems are made by the ASARC and DSARC. Decisions on nonmajor systems are generally recommended by an in-process review (IPR).

a. The LCSMM is divided into five major segments consisting of mission area analysis and four acquisition phases. Figure 2-3 depicts the principal manpower related requirements during each phase of the LCSMM.

b. Mission Area Analysis. Mission area analysis (MAA) is a continuing effort by the Army to identify and define projected mission needs, capabilities, and resources. When a specific need is determined, a Mission Element Need Statement (MENS) is prepared (major systems only). The purpose of the MENS is to obtain approval for initiating a new system acquisition process. The MENS contains a statement of the basis for the need, existing and planned capabilities, an assessment of the need, and the constraints including manpower to be applied to the need. Approval of the MENS by DOD terminates the MAA (Milestone 0) and is authority to proceed into Phase I of the LCSMM.

c. Phase I - Concept Exploration. During this phase, Army combat development agencies begin the development of organizational and operational concepts. Acquisition strategies and alternative capabilities, organizations, and doctrines are explored. The principal manpower related documents prepared are the Letter of Agreement (LOA), the Concept Formulation Package (CFP), the draft Decision Coordinating Paper (DCP) I, and the Manpower Analysis Paper (MAP) I.

(1) The LOA, prepared jointly by the combat and materiel developers, is an agreement that a materiel concept warrants further investigation. It defines the operational, technical, personnel, training, and logistics support concepts needed to investigate and develop the system concept. The CFP provides an analysis of system concept alternatives and costs including an initial cost and operational effectiveness analysis (COEA). The DCP I presents a top-management summary of the rationale for starting, continuing, reorienting or continuing a major development program. Resources required to support the preferred system are presented for the life cycle of the system.

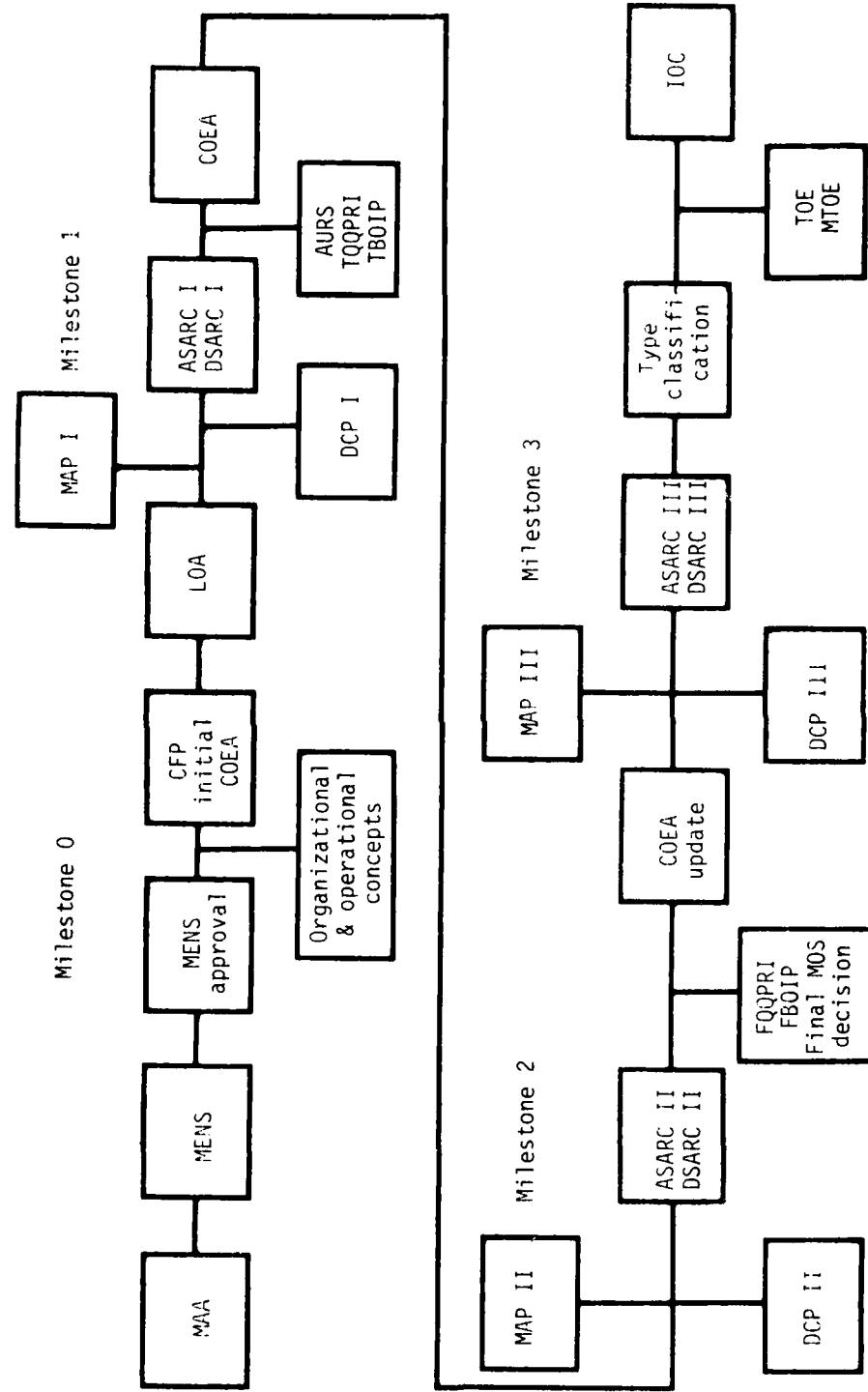


Figure 2-3. Manpower Requirements Documents in the Systems Development Process

(2) The MAP 1 is the principal document which addresses the problem considered in this study. It is not a required document for the DSARC but does support Army level decisions and formulations of manpower information. The MAP is prepared by TRADOC and is accompanied by force structure tradeoffs, developed (as described in paragraph 2-2) at the unit level, needed to offset any manpower increases required to operate and support the new system.

(3) The conceptual phase is terminated at Milestone 1 with a decision by the DSARC to proceed to the subsequent phase.

d. Phase II - Demonstration and Validation. The purpose of this phase is to verify preliminary designs, analyze alternative proposals and tradeoffs, select and validate a concept as the best alternative, and finally, to develop a plan for full-scale development. Once again, DCP II and MAP II must be prepared as during Phase I. Several new manpower documents are necessary at this point since Milestone 2 which terminates this phase is the key decision point allowing the Army to proceed with full scale development.

(1) During this phase several documents and decisions are required specifying the planned organizational requirements for manpower and training. The two key documents here are the automated unit reference sheets (AURS) and the Tentative Quantitative and Qualitative Personnel Requirements Information (TQQPRI). An AURS is prepared as a precursor to any new TOE documents which may be required and the TQQPRI is the first estimated statement of the grade and military occupational specialties (MOS) which will be needed. The TQQPRI is the basis for a tentative MOS evaluation by DCSPER and MILPERCEN and will later be modified as needed and incorporated into the Basis of Issue Plan (BOIP) for the equipment.

(2) This phase terminates with Milestone 2, the decision by DSARC II to proceed to the next phase--full scale development. Since this is such a key milestone, manpower planning data contained in MAP II, especially the manpower trade-off information, assumes critical importance. Whereas prior events and phases in the LCSMM had not been time-phased, the goal is for Milestone 2 to occur 60 months prior to the planned date for initial operational capability (IOC). This timeframe occurs during the program years of the POM and thus sufficient manpower and organizational data must be provided for programming these requirements and tradeoffs into the POM force structure. Subsequent manpower documents in the LCSMM should only refine and amplify on the data available at this point.

e. Phase III - Full Scale Development. During this phase of the LCSMM, the new system and all items necessary for its support are fully developed, engineered, fabricated, and tested. A contract is awarded

for limited production and a plan for production and deployment is finalized. The manpower related documents are the same as in Phase II except the tentative QQPRI and BOIP are finalized to become the FQQPRI and FBOIP. The MOS decision is also finalized. This phase culminates at Milestone 3, ASARC/DSARC III, which should occur 30 months prior to IOC, halfway through the POM program years, allowing refinement of the manpower programmed to operate and support the system.

f. Phase IV - Production and Deployment. At this time final testing takes place, unit activations and deployments are programmed, training plans are updated and implemented, the system is type classified, and TOE and Modification TOE (MTOE) are prepared. This phase results in the deployment of an operating, effective system as part of the Army force structure by the IOC date. No new manpower documents are required except for the TOE and MTOE.

2-5. PERSONNEL STRUCTURE AND COMPOSITION SYSTEM (PERSACS). The Structure and Composition System (SACS) is a series of automated computational programs which apply the detailed information at the grade, MOS and SSI level contained in TOE and The Army Authorization Document System (TAADS) files to the time-phased force structure changes at the unit level depicted in the Force Accounting System (FAS) and project time-phased demands for personnel and equipment. The PERSACS output depicts time-phased requirements and authorizations for personnel at grade, branch, and MOS level of detail which are required to implement programmed force structure changes. The LOGSACS performs a similar function for equipment at the line item number (LIN) level of detail. The PERSACS and LOGSACS are automated computational processes (not separately maintained data bases) which act on the data contained in other data bases.

a. PERSACS Processing. The PERSACS produces estimates of manpower requirements and authorizations over time based on the process shown in Figure 2-4. The output is provided to MILPERCEN for use in planning, programming and budgeting, for recruitment, training and distribution of personnel; and in mobilization planning. The PERSACS is the key process by which planned force structure changes are translated into a time-phased personnel distribution at the grade and MOS level of detail. Inputs to the PERSACS are the force structure reflected in FAS (to provide unit changes over time), MTOE and TDA documents in TAADS (to provide personnel grade, branch and MOS detail), and TOE documents in the TOE system (to provide the personnel detail required when there is no appropriate TAADS document). The first step in PERSACS production is force preparation. Force and command managers within ODCSOPS ensure that the M force from the TAA process is as accurate as possible. The automated update transaction system (AUTS) computer program is used to ensure that FAS and TAADS data are consistent. The force is then "frozen" (copied as a separate force to be used in the PERSACS) and a specific document from TAADS or the TOE file is designated to be used as a computational basis for the personnel detail of each programmed unit change. Appropriate TAADS documents are applied unless the unit is newly activated or

scheduled to be reorganized under a different TOE. In such cases, no TAADS entry exists and the TOE document will be used. The procedure for developing the computational base is largely automated but the results are analyzed to ensure that the best possible match is being made between unit position and document. The PERSACS computation extracts the personnel detail from TAADS and, if the authorized strength reflected in FAS matches that found in the TAADS document, states grade, branch, and MOS totals as reflected in TAADS. If the FAS-authorized strength totals are different from the TAADS document (reflecting programmed unit changes having been applied to FAS), PERSACS factors the TAADS personnel detail up or down to match the FAS total. That is, if a unit in FAS is programmed to increase 25 percent in strength and no TAADS document has been received from the MACOM detailing that change, the grade, branch, and MOS authorization in TAADS will be factored up by 25 percent beginning at the FAS EDATE. Thus, PERSACS estimates personnel authorization changes by factoring the base data in TAADS up or down according to the strength changes reflected in the planned force structure. Since future manpower authorizations are estimated based on mathematical ratios, the PERSACS results do not reflect the exact grade and MOS changes which will actually occur. Significant distortions in total grade and MOS requirements occur since these requirements are an accumulation of hundreds of changes applied to the force structure. The end result is a picture, changing continuously over time, of the distribution of personnel authorizations by grade, branch, and MOS. The timeframe covered by PERSACS data extends from current year out through the end of the program years.

b. PERSACS Scheduling. The PERSACS is produced at least four times annually (in October, January, April and July). Other PERSACS are produced for special purposes as required. PERSACS output is provided to the SSC Personnel Resource Analysis Directorate. This data is intended for use in the supportability analyses conducted by SSC in support of ODCSPER. The October PERSACS is especially important since it contains the grade, MOS, and SSI data which results from all of the force structure tradeoffs developed at the unit level during the TAA process.

2-6. SUPPORTABILITY ANALYSIS. An analysis of the supportability of new materiel systems and force structure changes can be conducted by the SSC as part of the functional reviews performed by that agency. This process incorporates a recently developed and partially implemented methodology for analyzing the manpower implications of Army programs. PERSACS data are among the inputs to this process.

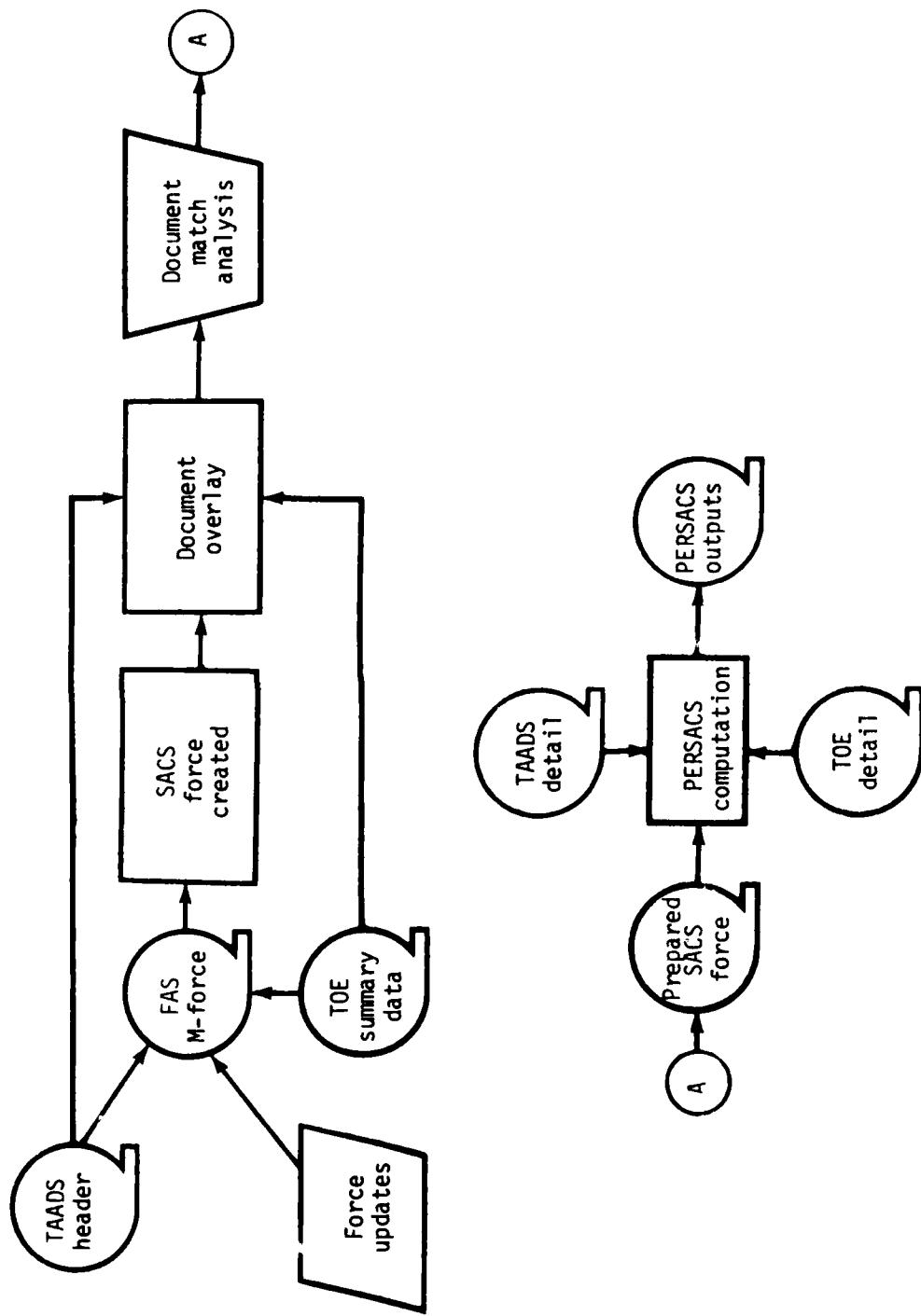


Figure 2-4. PERSACS

a. Purpose. The purpose of conducting supportability analyses is to determine the capability of the Army to provide personnel resources to implement new or revised programs in the force structure in the time-frame specified. It is not sufficient to state that a program is affordable based on an ability to program adequate manpower spaces into the force structure during POM development. If those authorized spaces cannot be filled on time, with personnel trained and ready to operate equipment, then readiness degradation will result. Thus, new programs must be determined to be supportable as well as affordable. Considerations which must be examined during this analysis are shown in Table 2-2. Distribution limitations include soldier contracts and incentive programs which restrict the Army's ability to move personnel from one skill to another. Decreased ability of the Army to move personnel between geographic locations results from a decrease in funds allotted to that purpose. Additional time required to induct personnel needed for new programs results from the delayed entry program (DEP) currently available to new recruits. This delay may be as long as a year. Further lead time is then required for basic, advanced and unit training, the duration of which depends on the degree of complexity involved with the needed skills. A sufficient sustaining base is needed to ensure that there are enough jobs in each skill for the overseas soldier to return to in CONUS. If not, MOS imbalances cause soldier dissatisfaction, short turnaround times, and a requirement for more manpower spaces than may otherwise be necessary. Quantitative and qualitative considerations are critical. New materiel systems are generally more sophisticated and complex than the systems they replace. Manpower requirements for higher grades and higher skill levels may be increased whereas adequate numbers of personnel in those higher grades are not available, and adequate numbers of recruits capable of being trained to higher skill levels may not be available. The impact of negative factors such as these on the soldier is important since adequate numbers of already trained personnel must be retained in the Army. The SSC methodology employed to conduct functional reviews and supportability analyses takes each of these considerations into account.

Table 2-2. Supportability Considerations

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- Distribution limitations
- Decreased movement
- Added lead time
- Need for sustaining base
- Quantitative/qualitative factors
- Impact on soldier

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b. Information Requirements. The supportability methodology requires that a data base be developed and maintained by the SSC which reflects changes to the manpower structure over time at the grade, MOS and SSI level of detail. This data base should reflect the best data available regarding the integration of force structure, organizational, and materiel system changes into the program structure. The PERSACS data produced from the programmed force structure developed during TAA and approved for the POM should be the data which best reflects the integration of program changes into the existing force structure at the grade, MOS, and SSI level. In fact, there are two major problems with PERSACS data which cause ODCSPER and SSC to reject the vast majority of PERSACS data reflecting manpower changes. These are lack of BOIP input to PERSACS and factoring.

(i) BOIP Input. Unlike the LOGSACS, in which force modernization is applied, the personnel requirements for new systems which are stated in BOIP and QQPRI documents are not included in the PERSACS statement of manpower requirements. The initial PERSACS design did not provide for this capability, since it was intended to develop information for the near term. There is no facility for modifying PERSACS output to include these planned changes to personnel needs and thus the data is incomplete. It would be impossible to predict accurately the impact of new programs on manpower unless all new programs, especially those as significant as major systems, are included. There is, however, an ongoing contract study (see Appendix C, Bibliography) to develop the ability to modify PERSACS output with BOIP and QQPRI personnel changes. This developmental effort is scheduled to be completed in sufficient time to apply this data during the PERSACS to be computed on the program force in October 1981.

(2) Factoring. Factoring is a significant problem in that it distorts, often to a significant degree, the estimated requirements for specific grade and MOS combinations. Factoring (described previously in paragraph 2-5a) is an estimating technique which was developed because of the growing deviation of MTOE documents from the TOE on which they should be modeled. It was felt that using a technique of estimating detailed changes in personnel requirements based on the actual authorization document would produce better forecasts than would be obtained by using the detail in the TOE document. The vast majority of personnel requirements computed for MTOE units in the program years are therefore based on the latest document in the TAADS rather than the appropriate level of the TOE.

c. Source of Data. As a result of their reluctance to use PERSACS in the outyears, the SSC data base is built and maintained using only the documented positions from PERSACS (i.e., near term) and whatever data regarding the program years SSC is able to obtain from the best available source. The vast majority of outyear data in PERSACS is not used for maintaining this data base. Instead information regarding new manpower requirements and associated tradeoffs is gathered by SSC from multiple sources including TRADOC recommendations and the DA staff agency having proponency over a new program. This information is then used to construct the data base for manpower requirements for all years subsequent to those documented in TAADS. Since MTOE documents are generally not present in TAADS for more than 2 years in the future, the program year data used by SSC is generally not based on PERSACS data. It should also be pointed out that SSC does not include data on TDA units and bases its supportability analysis only on the MTOE unit force structure. This procedure may derive from the fact that manpower requirements and tradeoffs recommended by TRADOC include only TOE units.

2-7. FLOW OF MANPOWER INFORMATION. The preceding paragraphs of this chapter discussed the development and approval of manpower tradeoffs, change management processes, and the conduct of supportability analyses. This paragraph ties these various elements together by discussing the flow of trade-off information through this system.

a. Recommended Changes and Tradeoffs. The flow of manpower trade-off information is depicted in the simplified flowchart in Figure 2-5. The entry points in this diagram are the four categories of change discussed in paragraph 2-1a: (1) force structure changes; (2) organizational changes; (3) new materiel systems which generate new type units (TOE); and (4) new materiel systems which are integrated into existing TOE units. The first fact to become apparent is that organizational, or TOE, changes do not enter the system directly, (block (2) of Figure 2-5). TOE changes are approved and published twice a year for implementation by the MACOM without having gone through the prioritization and resourcing process of POM development. It is not until a subsequent cycle of POM development that the needed resources are requested by the MACOM. It should also be remembered that the TOE changes which result from new materiel being integrated into existing units are not published until after type classification of that system; certainly too late to affect affordability and supportability determinations for the DSARC. Since BOIP/QQPRI data are not applied to the program force or the PERSACS, these data are applied to the SSC data base directly as it becomes available. In some cases TRADOC recommended manpower requirements and tradeoffs for these new systems can be considered by the DA Staff during program force development. Since modified TOE are not available, however, these conversions cannot be programmed into the force structure explicitly.

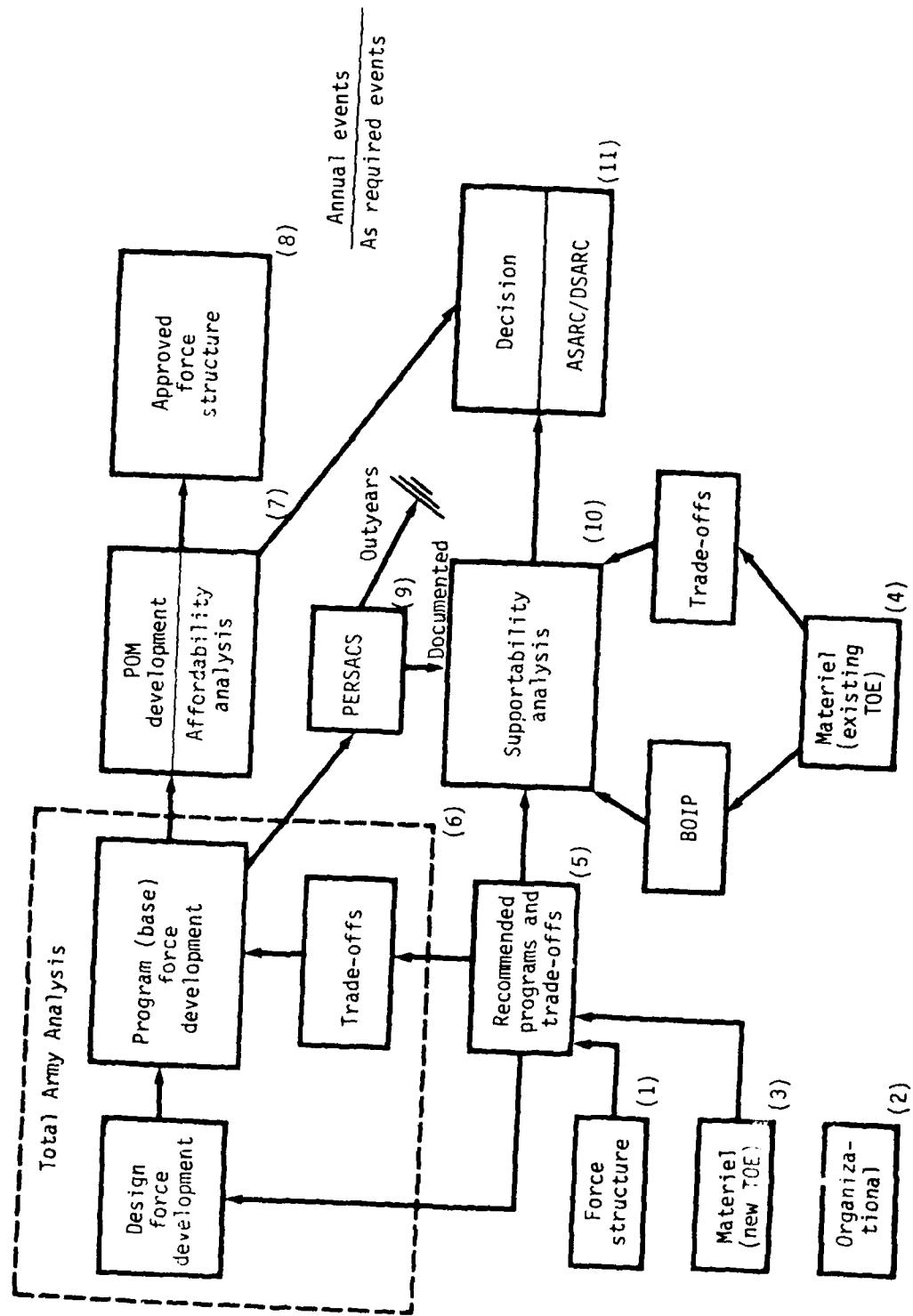


Figure 2-5. Information Flow

b. Total Army Analysis. The TRADOC recommended trade-off information and manpower requirements for force structure changes and materiel systems generating new TOE are, however, aggregated with other program changes affecting manpower (5) for consideration in the TAA process. The TAA process (6) described earlier, results in a force structure program at the parent unit level of detail and constrained within the force structure allowance for manpower. As was pointed out, this program force contains all of the new manpower requirements and the associated tradeoffs from all sources which have been developed by the DA Staff and integrated into a single total Army force structure. These changes may not be the same as those recommended by TRADOC and other change proponents but are those that are determined best to meet current objectives and selected scenarios.

c. POM Development. This program force is the force structure on which further POM decisionmaking (7) is based. During the development of the POM, this force structure is further modified based on MACOM requests for resources and an Army approved force structure (8) is determined. This Army force structure may be further modified based on OSD decisions. The program force resulting from TAA also serves as the basis for a PERSACS computation (9) in October of each year.

d. Supportability Analysis Data Base. The October PERSACS computes the grade, MOS, and SSI changes over the time period covered by the POM and is provided to ODCSPER and the SSC. This data thus reflects the grade, MOS, and SSI changes which result from new manpower requirements and tradeoffs which have been programmed during the TAA process. Because of the problems discussed above, however, only that data which has been documented by the MACOM in TAADS is used to update the SSC data base which is utilized for the conduct of supportability analyses (10). The remainder of the manpower data needed to build this data base is obtained from the best alternate sources available, normally from the TRADOC recommendations. From the affordability determinations represented by the POM process and from the supportability analysis conducted by ODCSPER and SSC, ASARC/DSARC decisions (11) are made for new materiel systems.

2-8. SUMMARY OF CURRENT PROCEDURES. Key points concerning the above processes and systems can be summarized as follows:

a. Data Discrepancy. Development of the program force in the TAA process proceeds in a systematized and integrated manner. It does not necessarily result in adoption of the tradeoffs recommended by TRADOC; the TRADOC tradeoffs, however, are frequently used in supportability analyses. Nor does it result in the development of information which necessarily allows the identification of specific relationships between a new manpower requirement and the tradeoffs which result from it. Indeed, a given decrement to the force structure may be attributable to

several new programs and vice versa. The force structure developed during the TAA-POM process, however, is the only valid source of all HQDA approved manpower tradeoffs as this structure represents the program published in the POM and forwarded to DOD.

b. PERSACS Inaccuracy. PERSACS translates tradeoffs made at the unit level during the TAA process into the grade, MOS, and SSI level needed by the SSC for supportability analysis. These data are neither sufficiently complete nor accurate in the program years for this purpose since force modernization (BOIP) is not applied and factoring distorts the translation of unit changes into detailed manpower changes. Since SSC must therefore develop its own data base for this purpose, the supportability of new programs is determined using different data than is used for assessing the affordability of new programs during POM development.

c. Scheduling Discrepancy. ASARC/DSARC scheduling is on an as required basis and is based on the stage of development of new systems. POM scheduling, on the other hand, is on an annual basis with milestones occurring on the same approximate schedule each year. This could result in an ASARC/DSARC being scheduled for a system which was not considered during the previous TAA-POM cycle.

d. Development of Manpower Tradeoffs. Development of military manpower tradeoffs is required and does occur, either at TRADOC or at HQDA, for new or revised programs. The system adequately provides for the development of military manpower tradeoffs since TRADOC develops recommendations for the TOE unit force structure. The development of civilian manpower requirements in the TDA structure is, within the constraints of HQDA guidance, conducted by each MACOM. The early planning for civilian manpower in support of new systems is conducted by each MACOM with results being incorporated into POM development through the MACOM submission of the MRIS. This submission provides civilian manpower estimates needed by each MACOM to support new materiel systems; it contains the level of detail needed by ODCSPER. Any increases in civilian manpower requirements contained in the MRIS compete for resources with other programs during POM development. Appropriate tradeoffs are programmed within the force structure based on POM decisions. Procedures for re-programming civilian manpower differ from those for military in that no agency provides civilian trade-off recommendations to HQDA to serve as a basis for POM decisions. The lack of civilian trade-off recommendations is a potential problem which should be considered for further study.

## CHAPTER 3

### ANALYSIS FOR IMPROVEMENTS

3-1. INTRODUCTION. During the course of this study, several problems were identified within the procedures which generate and transmit manpower trade-off information. Each of these problems was analyzed and management prescriptions for correcting the problem were formulated. These management prescriptions address procedural inadequacies, the correction of which is essential to the development of alternative sources and flow of information. Narrative discussions of these problems and associated management prescriptions together with tabular summaries (Tables 3-1 through 3-7 which appear at the end of the chapter) are provided in the following paragraphs. Management prescriptions for the following problems are discussed:

- a. The PERSACS lacks manpower data on equipment modernization.
- b. The PERSACS exhibits significant turbulence in grade and MOS requirements.
- c. The analysis required at MACOM delays submission of TAADS documentation of changes.
- d. The time required to analyze PERSACS data delays ODCS PER response to changes in manpower requirements.
- e. Excessive factoring in PERSACS produces an unacceptable level of distortion in grade and MOS projections during the program years.
- f. The data base used by the Soldier Support Center does not reflect all manpower tradeoffs developed in TAA and approved in the POM.
- g. Manpower trade-off information for new materiel systems is often generated too late to provide adequate lead time for manpower planning.

3-2. MANAGEMENT PRESCRIPTIONS. The presentation that follows focuses on the cause and effect of each problem, then recommends prescriptive measure(s) and assesses the impacts that might result from applying the prescriptive measure(s).

- a. Problem: The PERSACS Lacks Manpower Data on Equipment Modernization. PERSACS data provided to ODCS PER, MILPERCEN, and SSC which reflect grade, MOS, and SSI projections through the end of the POM do not contain manpower realignments associated with new materiel systems. Since TOE changes specifying these manpower requirements are not published until after type classification of the equipment, there is no document, under current PERSACS procedures, from which the grade and MOS

details can be extracted. As a result, the PERSACS computation does not include the manpower changes needed to support the fielding of the new equipment until after supportability determinations are made for the DSARC.

(1) Cause. Unlike the LOGSACS computational process, there is currently no capability to apply the manpower requirements and tradeoffs contained in the BOIP and QQPRI to the PERSACS. In the past, PERSACS outputs have been used primarily for planning personnel recruitment, training, and distribution. The data needed for these activities are generally near-term information, and thus little attention has been paid to the accuracy of PERSACS data in the program years. The current emphasis on force modernization and attendant need to improve manpower planning for that purpose has necessitated an increased need for accurate data in the program years. This is the timeframe where manpower requirements for new materiel systems must be programmed.

(2) Effect. With regard to this study, the most significant effect of this problem is that the PERSACS, which does not contain the manpower realignments resulting from equipment modernization, is totally unsuited for use in analyzing the supportability of new systems because it provides no information on the manpower requirements for those systems until new or revised TOE for those units affected are available. This is too late for supportability analysis purposes. The problem is compounded because, while manpower requirements for new systems are not included, manpower requirements for systems to be phased out in the BOIP remain in the PERSACS output. Thus the PERSACS will underestimate some manpower requirements and overstate others during the time period when new systems are to become operational.

(3) Prescription. In order to make PERSACS data usable for supportability analyses, the manpower requirements and tradeoffs for new systems must be incorporated in the PERSACS data base. This means that a capability to apply BOIP and QQPRI data to PERSACS must be developed. This need has been recognized, and the capability is currently being developed by contract and may be operational in time for production of the October 1981 PERSACS. This capability will require that DAMO-FDA apply the data to PERSACS as they do now for the LOGSACS. Analysts in DAMO-FDA will have the capability, using an interactive terminal, to modify the PERSACS output by making the grade, MOS, and SSI changes specified in the QQPRI. Plus and minus changes will be made to all grade/MOS/SSI combinations in the PERSACS data to reflect the requirements listed in the QQPRI. The appropriate Force Integration Staff Officer (FISO) in DAMO-RQ must also be involved in this process, as he is now involved with LOGSACS. The FISO thus becomes the individual who must ensure that the data being applied to PERSACS is accurate and who should resolve any conflicts and exceptions, particularly when trade-off manpower does not balance with new manpower requirements. If the QQPRI changes applied to the PERSACS data do not balance, i.e., the pluses exceed the minuses, the system will generate an exception report which must be referred to the FISO for resolution.

(4) Impact. The prescriptive measures described would greatly enhance the accuracy and completeness of PERSACS-data and would allow the use of PERSACS data for supportability analyses of new materiel systems. While other factors (to be discussed later) affect the accuracy of PERSACS data, data on equipment modernization is the major omission in PERSACS. Correcting this omission, however, cannot be accomplished without cost. Beyond the funds already allocated to incorporating the BOIP into PERSACS, there will be increasing workloads at HQDA (DAMO-FDA and RQ) to apply and insure the accuracy and adequacy of the BOIP/QQPRI information input to PERSACS.

b. Prob'lem: The PERSACS Exhibits Significant Turbulence in Grade and MOS Requirements. PERSACS is computed at least four times per year. Significant fluctuations in grade and MOS requirements occur from one PERSACS output to the next. This results in frequent alterations to the manpower planning documents which are based on PERSACS data, i.e., recruitment, training, and distribution plans, as well as the potential reversal of supportability determinations.

(1) Cause. Numerous decisions are made which affect the force structure during the timeframe spanning the current year, budget year, and first program year. Some of these actions reflect decisions and changing guidance from DOD. Many, if not the majority, of these changes, however, are based on decisions made within the Army at HQDA or MACOM levels. Since these late decisions create great turbulence and workload on the personnel and logistics systems as well as on units in the field, they prove to be counterproductive. Changes in the force structure made in the near term are extended throughout the program years unless actions are programmed to eliminate them at later dates. These changes in force structure are translated by PERSACS computations into corresponding fluctuations in grade and MOS requirements.

(2) Effect. The impacts of changes of this type are pervasive. MACOM are very reluctant to submit documentation in TAADS with effective dates (EDATE) more than 12 to 18 months in the future, since they must frequently be changed to accommodate new near-term guidance. This tends to decrease the reliability of PERSACS data beyond that timeframe. As was mentioned above, turbulence in PERSACS data causes additional workloads on personnel and logistics systems and on Army units in the field. Planned recruitments, training loads on TRADOC, and even planned personnel distributions must be changed frequently to accommodate this turbulence with impact on the entire Army down to and including units in the field. There are also increased workloads on the analysts involved with examining PERSACS data and its applications to manpower and personnel management.

(3) Prescription. Action should be taken to reduce the fluctuations in PERSACS data. Army management procedures should be altered to reduce the number of decisions that impact on the force structure in the near term with attendant revisions in manpower and equipment planning. Only those decisions originating at levels higher than HQDA should be applied to the near-term force structure on a routine basis. DA-initiated high priority actions which would be implemented in the near term should be staffed with ODCSPER prior to decision in order to ensure that required manpower assets can be made available by the effective date. Specifically, HQDA should not make routine (not high priority for combat readiness) force structure changes effective prior to the second program year unless they are directed from a higher level (DOD).

(4) Impact. Stabilizing the force structure through the first program year would reduce turbulence in manpower management and planning. It would allow the MACOM to submit authorization documents into TAADS with effective dates at least 2 years in the future and with a decreased likelihood that these documents would have to be changed later. The net effect of all these benefits will be more effective manpower recruiting, training and distribution plans with decreased workloads throughout the system. The major cost would be the limitation that this requirement would place on HQDA, the MACOM, and field commanders to influence routinely their organization and force structure in the near term.

c. Problem: The Analysis Required at MACOM Delays Submission of TAADS Documentation of Changes. Each change in organization which the MACOM is directed to implement requires analysis to determine how each change, and frequently multiple changes, is to be applied to the units in that MACOM. Since there are many changes to be applied (frequently 50,000 or more semiannually) and since MACOM frequently have several different MTOE for the same type units, the time required to analyze TOE changes often results in failure to document these changes in time for the next TAADS update cycle. This creates a delay of 6 months until the next TAADS update cycle.

(1) Cause. The large number of TOE changes which must be implemented, together with other directed organizational changes (authorized level of organization, for example), require lengthy analysis to determine how those changes affect units within that MACOM. Since like units are not generally standardized in accordance with the TOE, each MTOE must be analyzed individually to determine how the change will be applied.

(2) Effect. The number of manhours spent in analyzing changes and how they are to be applied is extensive. The result is a heavy expense in manhours or either delay in document submission or the occurrence of errors in implementation. Changes received by the MACOM in May might not be analyzed and documented in MTOE by the close of the TAADS update cycle in September and thus must wait for the next TAADS update cycle which closes the following March. This results in a degradation of data being used in PERSACS which could be easily prevented.

(3) Prescription. Increased automation of TAADS update procedures is made feasible by the recently approved program to standardize MTOE units worldwide. Army units (with few exceptions) will be reorganized and MTOE submitted so that units will conform to that level of the TOE which is appropriate to their authorized level of organization (ALO). As this occurs, analysis to determine how changes in TOE must be applied to various MTOE becomes unnecessary for standardized units. In fact, submission of changes by MACOM for those units becomes unnecessary. Since all TOE changes are to be uniformly applied (some units will be excepted based on special requirements), these changes should be automatically applied to the TAADS at a central point. Based on ALO, each MTOE can be modified directly and automatically in TAADS by extracting data from the appropriate level of the TOE change. These changes can be applied automatically to TAADS at HQDA and distributed to MACOM, thus resulting in the savings in time, workload, and accuracy that come from update of all standardized MTOE at a single point in the system.

(4) Impact. This prescription would have the dual benefits of reducing analysis workload at the MACOM and enhancing the currency and accuracy of TAADS data for use in PERSACS and manpower management. The cost would be computer programing to develop a system for updating TAADS at a central point and the continuing necessity to run that program semiannually. No additional workload would be placed on the DA Staff.

d. Problem: The Time Required to Analyze PERSACS Data Delays ODCSPER Response to Changes in Manpower Requirements. Each PERSACS output, at least four per year, must be analyzed using a combination of manual and automated procedures to determine the changes to manpower requirements that have occurred since the previous PERSACS computation. The time required to perform this analysis prevents ODCSPER from performing a rapid supportability determination of the altered manpower program reflected in the PERSACS.

(1) Cause. The PERSACS computation is run several times throughout the year. Each computation results in a completely new set of data which contains new grade and MOS projections over time even though much of the force structure has not changed since the previous PERSACS. Each time the PERSACS is produced, analysts at ODCSPER, MILPERCEN, and SSC are presented with a completely new data base from which changes to grade, MOS, and SSI requirements must be determined.

(2) Effect. The number of manhours required in analyzing PERSACS data to determine the grade and MOS impact delays the ability of manpower managers to respond to force structure changes. Regarding supportability analysis, the time required to determine the changes in grade and MOS requirements in the October PERSACS would prevent ODCSPER from making a supportability analysis of the program force in sufficient time to influence POM decisions.

(3) Prescription. The time required to identify the changes in manpower requirements from the previous PERSACS by manual analysis is one segment of that time delay which could be eliminated. Increased automation of the PERSACS process could be used to reduce analysis time by automating the identification of changes from the previous PERSACS. This would have a favorable impact on the time needed to respond to questions regarding the supportability of program changes. The PERSACS process should be modified to include an additional output which would reflect and highlight only the changes in grade, MOS, and SSI requirements since the previous PERSACS. This change-only output could be computed either by itself or in addition to the standard PERSACS output depending on the purpose of a given PERSACS computation.

(4) Impact. Production of a change-only PERSACS output would highlight key information for manpower managers and would be particularly beneficial in allowing more rapid response to questions regarding supportability. The use of data depicting changes from existing grade and MOS projections would facilitate rapid identification of the effect on training loads and other factors determining the supportability of the program force. Manhours required for analysis of the PERSACS product would be reduced with an attendant decrease in the time required to respond to changes in grade and MOS requirements. Again, the principal cost would be the one-time requirement to develop and program this capability. Data base maintenance time would not be impacted seriously.

e. Problem: Excessive Factoring in PERSACS Produces an Unacceptable Level of Distortion in Grade and MOS Projections During the Program Years. Comparison of PERSACS results with intended grade and MOS requirements changes has indicated that computational routines within PERSACS have distorted those projections to a degree unacceptable to ODCSPER. This prevents the use of grade and MOS data derived directly from the approved program force as the basis for supportability determinations.

(1) Cause. For many years, the MTOE documents submitted by MACOM have reflected a growing and significant deviation from the model organization reflected in the TOE. Because of this deviation, computational routines in PERSACS were created to allow the projection of grade and MOS requirements based on the detailed information in the most recent TAADS document whenever that document was felt to be a more accurate base for projection than the applicable TOE. Deviation of MTOE from TOE rapidly became so significant that use of the MTOE for projections has become predominant in PERSACS.

(2) Effect. This process, known as factoring and discussed in paragraph 2-5, utilizes a mathematical computation of manpower requirements based on the ratio of MOS and grade requirements to the total change in unit strength and is thus an approximation which frequently distorts the projection from what is actually intended. These projections are felt by ODCSPER to be inaccurate to a degree where they are not acceptable for use in supportability analyses. This necessitates the use of data sources which have not been subjected to the POM decision process.

(3) Prescription. The program to standardize MTOE on a worldwide basis will result in conformance of MTOE to the appropriate level of the TOE. Since planned changes to MTOE units will be in accordance with the appropriate level of the TOE, the reasons for mathematical estimation of detailed grade and MOS requirements will be avoided. Therefore, factoring should be eliminated in PERSACS for all standardized units. Details for projections during the program years which are not yet documented in TAADS should be extracted from the TOE file at the appropriate level. MOS and grade projections would thus be a summation of data extracted from the TOE rather than a mathematical estimation from the MTOE. This change in procedures need not wait until the unit is actually reorganized to be standard with the TOE. It should be accomplished as soon as the reorganization of the unit can be programmed to occur in the master force in the FAS.

(4) Impact. This prescription would eliminate estimation of grade and MOS changes for all but those few MTOE which cannot be standardized. It would greatly enhance the accuracy of the PERSACS data (especially in conjunction with the application of BOIP to PERSACS). There would be little or no cost to implement this prescription, since the capability to select TOE or MTOE as a basis for projection already exists in PERSACS.

f. Problem: The Data Base Used by the Soldier Support Center Does Not Reflect All Manpower Tradeoffs Developed in TAA and Approved in the POM. Since PERSACS output based on the program force is not the basis for supportability analyses during all of the program years, these analyses do not reflect all of the force structure decisions made in the

process of developing and approving program changes. As a result, supportability determinations are based on data which do not reflect the exact program which has been approved during POM development.

(1) Cause. PERSACS data are not used because of inaccuracies in projections for the program years. The two primary causes of the inaccuracies are lack of equipment modernization (BOIP) in PERSACS and the distortion caused by factoring.

(2) Effect. Supportability analyses do not reflect all of the approved manpower tradeoffs established during TAA/POM development. Further, since ODCSPER and SSC must obtain data on program changes from alternative sources, additional and unnecessary workload is generated. The best alternative source of data regarding program changes is the proponent of that change, usually TRADOC. The data obtained is normally at the parent unit level of detail. Thus the added workload consists of data search, subsequent translation of data from the parent unit level to the grade and MOS level, and the entry of that information into the data base for approximately 7,200 units.

(3) Prescription. As the management prescriptions discussed in paragraphs 3-2a and 3-2e are implemented, ODCSPER and SSC should base all supportability analyses on a data base derived from PERSACS output for all years through the last program year. The current procedures for maintaining a data base should be replaced completely by the use of PERSACS data and that data should be updated with new PERSACS output at least four times per year.

(4) Impact. This change in the source of data for the program years in the SSC data base would result in basing supportability determinations on the same force structure which is determined affordable in TAA and the POM. It would also enhance the synchronization between manpower and logistics planning, since this recommended force structure is the same one used for the LOGSACS computation which serves as the basis for development of the Total Army Equipment Distribution Program (TAEDP). Finally, the workload required to maintain a data base for supportability analyses would be greatly reduced since PERSACS data is already at the level of detail required. There would no longer be a requirement for data search, translation of the data into the needed level of detail, and manual entry of that data into the data base.

g. Problem: Manpower Trade-off Information for New Materiel Systems is Often Generated Too Late to Provide Adequate Lead Time for Manpower Planning. The manpower planning documents for new materiel systems discussed in the previous chapter are frequently late and do not contain the needed information at the early milestones of the LCSMM.

(1) Cause. Manpower planning requirements for new materiel systems have not surfaced in sufficient detail to be addressed as issues early in the materiel development process. As a result, there has been a tendency to deemphasize manpower considerations during the early stages of systems development.

(2) Effect. Late submissions and understated requirements for manpower during the early developmental process result in inaccurate or inadequate information on which to base manpower planning and decisions. This, in turn, may result in late determinations of affordability and supportability or the development of the wrong conclusion in those areas. Fielding of new systems may be delayed until adequate, trained manpower is available. Finally, decreased readiness ratings may result from lack of sufficient, trained personnel to man and support new systems.

(3) Prescription. The manpower information submissions required at each stage of the LCSMM must be complete, on time, and present the best estimates of manpower requirements available. HQDA should emphasize the necessity for and importance of early manpower estimation. The documents describing these reporting requirements, particularly DA Pamphlet 11-25, should be rewritten and brought up to date. These requirements should then be enforced strictly by HQDA prior to a decision to proceed to subsequent materiel development milestones.

(4) Impact. These actions would enhance the early determination of manpower affordability and supportability of new systems. They would enhance the ability of the Army to determine at an earlier stage of development whether efforts should continue on a new system, thus potentially saving developmental costs on systems that cannot be supported. They would also provide for the earlier planning of manpower recruiting, training, and distribution needs in support of new systems. Since these manpower information requirements must be developed prior to the IOC date, the workload needed to develop them need only be shifted to earlier stages in order to improve the manpower planning aspects of systems development.

h. The management prescriptions described in the preceding material are summarized in Tables 3-1 through 3-7 at the end of this chapter.

3-3. ALTERNATIVE INFORMATION FLOWS. The preceding prescriptions represent a series of management actions which, if implemented, would enhance the availability, accuracy, and timeliness of management information regarding new manpower requirements and associated tradeoffs. Implementation of these prescriptions would allow the modification of the current flow of manpower information to ODCS PER (described in Chapter 2) for use in supportability analyses. Alternatives to current sources of data used in supportability analyses should make use of the enhanced quality of PERSACS data to improve the timeliness and accuracy of the data base used for supportability determinations.

a. Alternative 1. The flow of information depicted in Figure 3-1 requires no systems or procedural changes from the current system other than those described in management prescriptions regarding the application of BOIP to PERSACS, reduction of factoring in PERSACS, and the use of PERSACS data as the basis for supportability analysis.

(1) Description. The major changes from current procedures, discussed in the previous chapter, lie in the way current processes are linked together and the flow of information through the system. Modifications to TOE (organizational changes) will be entering the system when the recommendations of the IC Study, are implemented. Under the procedures developed in the IC Study Report and recommended to the study sponsor (ODCSOPS) by the IC Study Advisory Group, recommended changes to TOE will be prioritized along with other program changes, and a determination of those which should be resourced in the POM will be made. Only those changes which will be resourced can be implemented by MACOM. As shown in Figure 3-1, all force structure, organizational, and materiel systems changes will enter the TAA-POM development process with the exception of those materiel systems to be integrated into existing TOE. The TAA and POM development processes will occur as described in Chapter 2. Once an approved force structure has resulted from POM development, a PERSACS computation will be accomplished. Starting in 1981, however, the manpower requirements reflected in BOIP, together with any necessary tradeoffs, can be applied to the PERSACS. In this way manpower for materiel systems to be integrated into existing TOE can be applied to the data, thus including all of the types of changes necessary to perform supportability analysis. Under this alternative, then, no major inputs to the SSC data base other than the PERSACS are necessary to enable the conduct of supportability analyses in support of the ASARC/DSARC decisionmaking processes.

(2) Impact. Modifying information flow as shown in Figure 3-1 would:

(a) Ensure that supportability analyses are based on all approved manpower tradeoffs developed in the TAA process by using PERSACS data computed directly from the program force.

(b) Include all of the types of changes listed in Chapter 2, thus ensuring that no programmed realignments of manpower are omitted from the analysis.

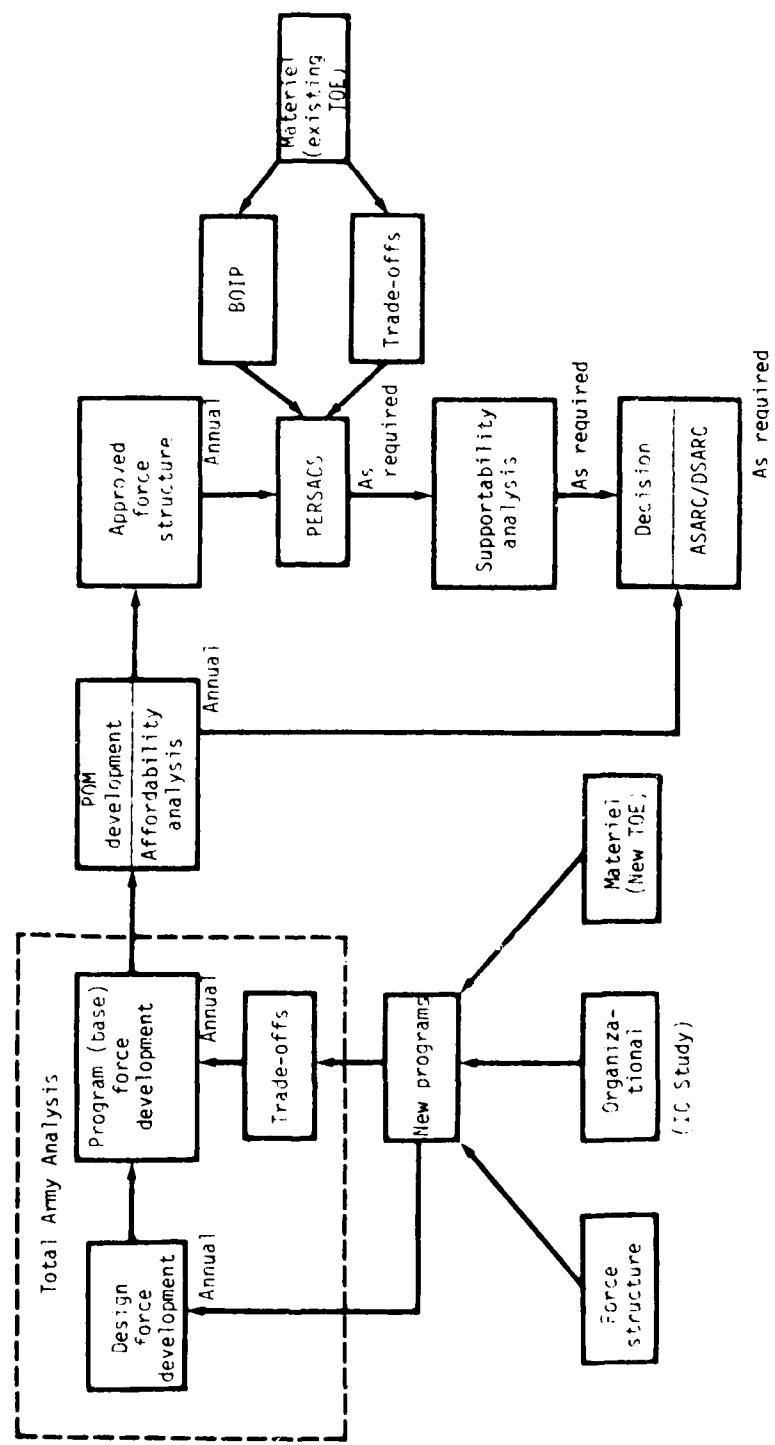


Figure 3-1. Alternative Information Flow

(c) Allow for the update of supportability analyses each time PERSACS is computed. If the necessity arises, a special PERSACS can be computed as the basis for a supportability analysis of a program change not included in the previous PERSACS. Application of BOIP/QQPRI information to previously computed PERSACS data can be accomplished quickly to provide information for supportability questions which might arise as a result of ASARC/DSARC requirements. This will allow supportability determinations for new materiel systems which were not included during the previous POM development cycle.

(d) Reduce SSC workload by elimination of data search, the need to translate data into the grade and MOS level of detail, and the need to enter data into the data base by terminal input (PERSACS tape in machine readable format). The PERSACS output can be used to replace the contents of the existing data base without further processing.

b. Alternative 2. The alternative shown in Figure 3-2 goes one step further. The information flow depicted in Figure 3-1 would probably require that analysis time for PERSACS outputs (as discussed in paragraph 3-2d) be shortened through the development of a change-only PERSACS product (as shown in Table 3-4). Given the capability to perform "what if" analysis on an interactive computer terminal as will be provided with BOIP in PERSACS, and the rapid identification of changes at the grade and MOS level in a change-only PERSACS output, the impact of these changes on previous supportability analyses could be determined rapidly. This would allow supportability questions to be answered on the manpower tradeoffs contained in the program (base) force structure developed in TAA as shown in Figure 3-2. The question of supportability of program changes or new programs contained in the program force could then be addressed during POM development. The supportability analysis data base could then be updated upon completion of POM development and the provision of another PERSACS based on the approved force. All other elements of this alternative information flow are the same as for Alternative 1.

(2) Impact. In addition to the advantages listed for Alternative 1, this alternative would allow supportability considerations to be included in the decisionmaking process of POM development by providing for a rapid analysis of the program force structure developed during the TAA.

c. Other Alternatives. The ability to use PERSACS data in conducting supportability analyses, together with the capabilities of the BOIP in the PERSACS process, will allow great flexibility in the flow of information and the uses of that information. The two information flows depicted above represent the basic linkages between the processes involved. Variations of that basic pattern can be made as the need arises to accommodate special informational requirements for manpower managers.

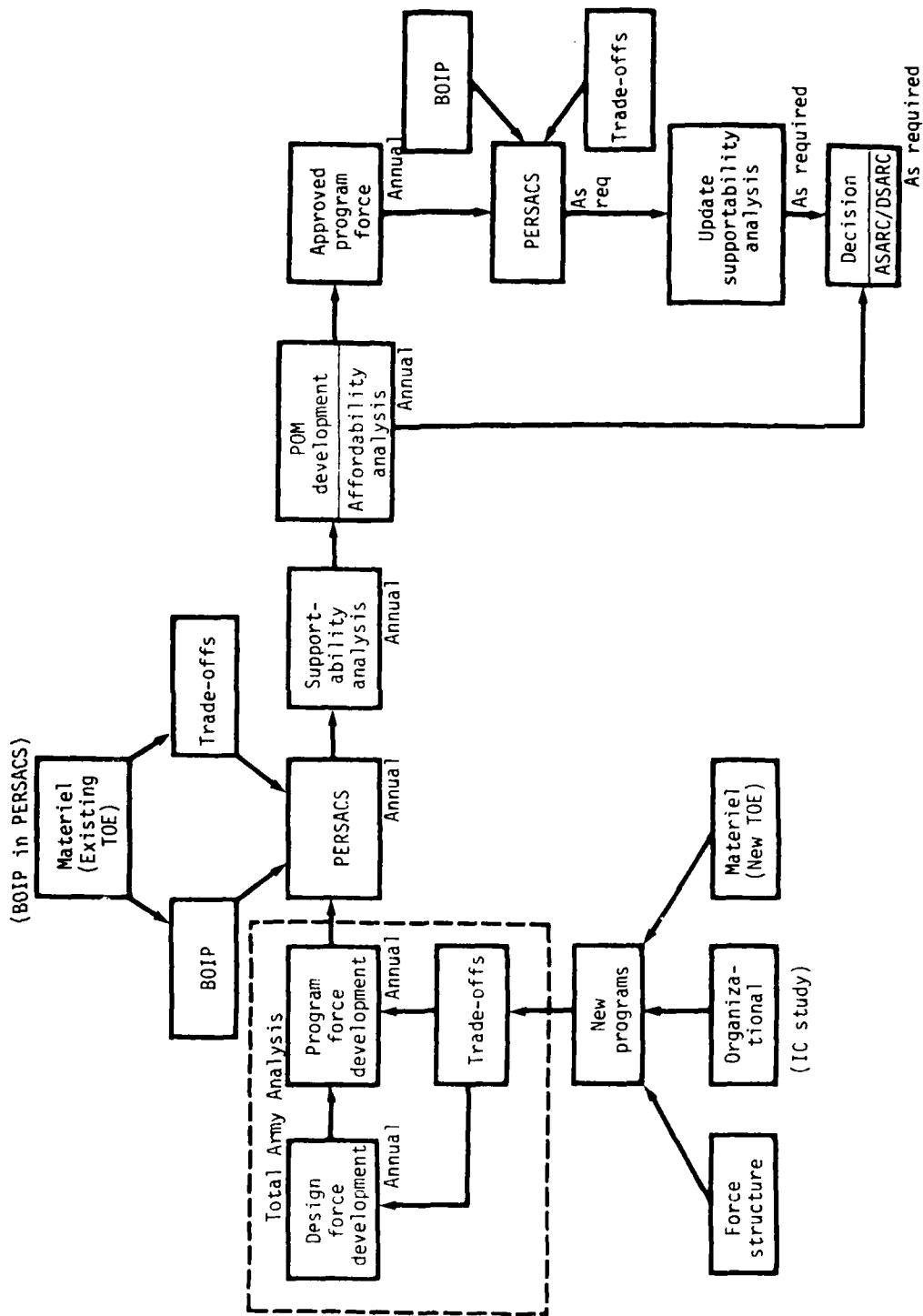


Figure 3-2. Alternative Information Flow 2

3-4. SUMMARY. The previous discussion points out seven prescriptions for management changes which could be accomplished at relatively low cost and reap significant benefits in terms of increased timeliness, accuracy, and completeness of manpower trade-off information. Three of these prescriptions (application of BOIP to PERSACS, reduction of factoring in PERSACS and use of PERSACS as the data base for supportability analyses) are essential to overcoming the problems stated in the MTM study directive. When the capability to apply BOIP to PERSACS is implemented, when factoring is significantly reduced, and when the SSC uses the PERSACS product as its data for the program years, the informational needs of the manpower managers regarding supportability issues will be met. Alternative information flows can then be applied to ensure that the flexibility of these developments can be applied to providing timely responses to questions regarding the manpower supportability of new programs.

Table 3-1. Lack of Equipment Modernization in PERSACS

Problem: The PERSACS lacks manpower data on equipment modernization	Cause	Effect	Prescription	Impact of prescription
BUIP/QQPRI manpower data are not applied to PERSACS computations.	Statement of manpower needs for the program years does not include grade/MOS requirements for new systems.	Manpower requirements and tradeoffs contained in BUIP/QQPRI should be applied to all PERSACS computations by DAMO-FD.	Application to PERSACS of manpower data in BUIP/QQPRI should be coordinated by (DAMO-RQ (F150) as is now done for LOGSACS.	Creates additional workload in DAMO-FD and DAMO-RQ to insure accuracy of PERSACS data.
	Statement of manpower needs for the program years includes grade/MOS requirements for systems that will be phased out.	Manpower sufficiency for new systems can not be analyzed on the basis of PERSACS data.	Enhances accuracy and completeness of PERSACS data for all uses.	Allows use of PERSACS data for supportability analyses of new materiel systems.
				Note: Capability to apply BUIP to PERSACS is currently being developed by contract and should be implemented by the Oct, 1981 PERSACS computation.

Table 3-2. Turbulence in PERSACS Data

Problem: The PERSACS data exhibits significant turbulence in grade and MOS requirements			
Cause	Effect	prescription	Impact of prescription
Numerous decisions at the HQDA and MACOM levels are made with implementation dates incompatible with manpower and logistics systems' ability to respond. This causes turbulence in the near-term force structure used as the basis for PERSACS.	Turbulence is levied on personnel recruiting, training, and distribution systems. MACOM are unwilling to submit TAADS documents with extended lead time to effective dates.	Only those decisions originating at levels higher than HQDA should be routinely applied to force structure during current through first program year.	Limits HQDA and MACOM ability to influence force structure and organization prior to second program year.
		Provides sufficient lead time to manpower and logistics managers to respond efficiently.	Enhances MACOM ability to program extended lead times for implementation of TAADS documents.

Table 3-3. Delays in Submission of TAADS Documents

Cause	Effect	Prescription	Impact of prescription
The large volume of TOE changes which must be implemented by MACOM, when coupled with other guidance, requires extensive analysis to determine how it must be applied within each MACOM.	Number of manhours spent in analysis of how changes are to be applied is extensive. Delays in document submission and error rates are excessive.	The program to standardize MTOE worldwide allows increased automation of documentation procedures. Since TOE changes will be uniformly applied to MTOE, these changes should be automatically applied in the TAADS for all standardized units.	Requires computer programming to develop automated update capability at HQDA level. Data base maintenance time in USAMSSA would be increased. Decreases manhours needed for change analysis at each MACOM.

Problem: The analysis required at MACOM delays submission of TAADS documentation of changes

Table 3-4. Analysis of PERSACS Data

Problem: The time required to analyze PERSACS data delays ODCSPER response to changes in manpower requirements

Cause	Effect	Prescription	Impact of prescription
PERSACS computation produces an entirely new data base each time it is run, including much data that is unchanged. The total data base must be analyzed by ODCSPER, MILPERCN, and SSC to determine grade and MOS impact.	Number of manhours spent in data analysis is extensive. Delays ability of manpower managers to respond to questions pertaining to manpower supportability.	Increased automation of analysis process is possible. PERSACS process should be modified to reflect and highlight the changes in grade/MOS requirements from the previous PERSACS data base. This product could be in addition to the current PERSACS output format or in addition to it as needs dictate.	Requires computer programming to develop PERSACS product reflecting grade/MOS changes only. Data base maintenance time would not be affected. Decreases manhours needed for analysis with attendant enhancement of response time.

Table 3-5. Excessive Distortion in PERSACS

Cause	Effect	Prescription	Impact of prescription
Deviation of MTOE from the TOE model resulted in the need to project grade, MOS requirements, based on the most recent TAADS document instead of deriving detail from the TOE.	Projected grade, MOS manpower requirements in the outyears are estimated based on mathematical ratios, thus introducing distortions.	The program to standardize MTOE on a worldwide basis will result in MTOE conformance with the TOE. Planned changes to MTOE units will be in accordance with TOE. Factoring should be eliminated for standardized units and PERSACS should extract	Eliminates factoring distortions for all but those MTOE units which must remain nonstandard.
	These projections are not sufficiently accurate for supportability analyses.	detailed grade, MOS requirements from the latest version of TOE file.	Enhances accuracy of PERSACS sufficiently that supportability analyses can utilize the PERSACS data reflecting the program force structure.

Table 3-6. Data Base for Supportability Analyses

Cause	Effect	Prescription	Impact of prescription
Problem: The data base used by the Soldier Support Center does not reflect all manpower tradeoffs developed in TAA and approved in the POM	<p>Lack of equipment modernization data and excessive factoring result in PERSACS data not being used for the conduct of supportability analyses.</p> <p>Supportability analyses do not reflect approved manpower tradeoffs as determined in the POM.</p> <p>SSC/ODCSPER must obtain data from TRADOC and other sources and translate it to needed level of detail.</p>	<p>As the prescriptions shown in Tables 3-1 and 3-5 are implemented, all supportability analyses should be based on data derived from the PERSACS program year content.</p>	<p>Bases supportability analyses on same program as affordability determinations.</p> <p>Enhances synchronization of manpower and equipment planning since same force program would be used as basis for PERSACS and LOGSACS.</p> <p>Reduces workload on manpower managers since PERSACS data is already at level of detail required for supportability analysis.</p>

Table 3-7. Inadequate Lead Time for Manpower Planning

Cause	Effect	Prescription	Impact of prescription
Manpower planning requirements for new materiel systems have not been strictly enforced.	<p>Manpower affordability determinations are either delayed or based on incomplete information.</p> <p>Fielding of new systems may be delayed.</p>	<p>The manpower data requirements for each stage of the Life Cycle System Management Model should be strictly enforced by HQDA.</p>	<p>Enhances early determination of manpower affordability and supportability of new systems.</p> <p>Allows for earlier manpower planning of recruiting, training, and distribution of personnel to support new systems.</p> <p>Redistributes manpower planning requirements of combat and materiel developers to earlier milestones of system development than has been practiced.</p>

## CHAPTER 4

### SUMMARY AND OBSERVATIONS

4-1. INTRODUCTION. The MTM Study analyzed the development and flow of manpower management information needed to assess the supportability of new or revised Army programs. The essential elements of analysis (EEA) provided in the study directive focused the study on the requirement for data, together with its availability and flow through Army management processes to ODCS PER and SSC analysts as the end user of that data. The degree of synchronization between manpower management activities, especially with regard to the development and transmission of information, thus became a key issue for investigation during the study. These investigations and analyses developed several observations which state or connote deficiencies in the current process of developing and transmitting manpower trade-off information. Management prescriptions to correct the more serious of these deficiencies were presented in Chapter 3. This chapter summarizes the investigative efforts of the MTM Study by specifically addressing the EEA required by the study directive and concludes by presenting the major observations of the study.

4-2. ESSENTIAL ELEMENTS OF ANALYSIS. The EEA which were required and which guided the conduct of the study are stated and discussed below.

a. What are the various types of changes which drive manpower reallocations? What are their sources and when do they occur? This study identified three major types of change which might result in increased or redistributed manpower from existing programs. These are: force structure changes in which units are activated, inactivated, or reorganized in the programmed force structure; organizational changes in which the internal composition of units is altered; and the development of new materiel systems. For the purpose of tracking information flow, it was necessary to subdivide the third category into two separate elements: those new materiel systems which generate new type organizations and thus require the development of new TOE, and those new materiel systems which are integrated into existing TOE and thus generate changes to current TOE documents.

(1) There are many possible originators of force structure changes. The vast preponderance of these changes, however, originate either from HQDA ODCSOPS, or from TRADOC. TRADOC develops recommended force structure changes which can originate and be forwarded to HQDA at any time during the year. HQDA ODCSOPS develops force structure changes based on changing guidance, objectives, and constraints. The majority of these changes are developed during the Total Army Analysis (TAA) which occurs annually and produces a program force structure for input to POM development each September. TRADOC recommended force structure changes must be integrated into the TAA process to be approved during

the resource allocation process. The POM development process is completed with its publication in May. Thus, the key points in time for analyzing force structure changes occur in every September and May.

(2) Organizational and new materiel system changes, while they can be initiated elsewhere, usually issue from TRADOC, the Army's combat developer. Organizational and materiel system changes can originate and be approved at any time during the year.

b. When and where are manpower authorization tradeoffs identified for each of the various types of changes? Manpower trade-offs are identified for each of the three major types of changes as follows:

(1) Manpower tradeoffs for organizational (TOE) changes are not currently being identified anywhere in the system until after those changes have been approved and disseminated to the MACOM for approval. This is a major problem since these changes, when aggregated on a semi-annual basis in the CCT, can have a significant impact on the MACOM. This problem was addressed by the Implementation of Change Study, and pending implementation of that study's results will cause those changes to be considered along with other resource demanding changes prior to approval of the organizational change. In the revised system, only those changes for which manpower tradeoffs can be programmed will be authorized in MTOE.

(2) The Manpower Analysis Paper which presents TRADOC recommendations for manpower requirements and the associated tradeoffs for new materiel systems must be submitted to HQDA 60 days prior to each major milestone of the Life Cycle System Management Model.

(3) Development of force structure tradeoffs, which, in turn, determine the manpower tradeoffs, is an integral part of the Total Army Analysis process. For those force structure studies being accomplished within TRADOC, recommended tradeoffs must be submitted as part of those studies. These recommendations are considered during the TAA process and integrated into the program force as appropriate. Tradeoffs are finalized implicitly once a year during the POM development process.

c. What are the procedures for providing manpower tradeoff data to ODCS PER for affordability assessments? Manpower trade-off data are developed as a result of the force structuring process which occurs during the TAA-POM development cycle. The program force contains unit level reorganizations which are translated into manpower tradeoffs at the grade, MOS, and SSI level by the PERSACS. The PERSACS is the vehicle by which these data are provided to ODCS PER. Since there are, however, inaccuracies in the PERSACS process which limit its usefulness, ODCS PER and SSC must gather data from the best alternative source. This procedure is not adequate, since there is no guarantee that the data gathered are fully consistent with the changes in the program force.

d. What data are required by ODCSPER to perform required affordability assessments? The Soldier Support Center performs the required assessments of manpower supportability for ODCSPER. ODCSPER and SSC require data representing the tradeoffs contained in the programmed force structure. The specific data required are all changes, both new manpower requirements and associated tradeoffs, at the grade, MOS, and SSI level of detail from the current year through the final program year. Since the SSC analyzes only the manpower implications of changes to TOE units, they need only receive data on military manpower changes. To fulfill its requirements fully, however, ODCSPER also needs information specifying the impact of new or revised programs on civilian manpower.

e. What synchronization is required between the processes for generating and approving changes and the processes for managing manpower? Does it exist? The answer to this question must be limited to the area of concern of this study, i.e., manpower changes which must be programmed for organizational, force structure, and materiel system changes. It is essential that manpower planning be accomplished utilizing data which represent the best information regarding the changes programmed to occur in the force structure as a result of each of these three categories of change. The programmed force structure is altered throughout the year as a result of the annual TAA-POM development, program approval cycle. Synchronization of manpower planning is also required with the materiel system change process specified by the Life Cycle System Management Model to insure that manpower questions are adequately addressed at each milestone. This synchronization, however, is lacking for several reasons. First, manpower planning and a determination of supportability do not occur for the totality of organizational (TOE) changes approved during a given year. TOE changes are approved on an individual basis and promulgated for implementation without an analysis of their total manpower impact. Second, synchronization between supportability analysis and the programmed force structure is lacking, since the manpower data computed by the PERSACS do not accurately represent the programmed changes at the unit level. Finally, there is a lack of synchronization between those changes programmed for the force structure and those for materiel systems since ASARC/DSARC scheduling is not linked to the POM development schedule. Chapter 3 discusses corrective actions for improvement of the synchronization between the change approval and manpower management processes.

4-3. OBSERVATIONS. The major observations of this study are presented in the following material:

a. Manpower tradeoffs are necessitated by and developed within the force structure program as a result of organizational, force structure, and materiel system changes which either increase the requirement for manpower or alter the distribution of manpower among various skills. These changes emanate, for the most part, from either TRADOC or ODCSOPS, HQDA. The manpower tradeoffs which result are finalized within the TAA-POM development process at HQDA. This process for integrating change into the Army program results in tradeoffs being programmed at the parent unit level in the master force. These unit level changes are translated into manpower tradeoffs at the grade, MOS, and SSI level of detail by the PERSACS which is provided to ODCSPER.

b. The major omission from the trade-off development process is that organizational, or TOE, changes are not analyzed for manpower impact nor are tradeoffs developed for them. This problem should be overcome when the recommendations of the Implementation of Change Study are implemented along with the unit standardization program.

c. The PERSACS is the appropriate vehicle for the provision of manpower requirements and associated tradeoffs to ODCSPER and the SSC. Use of PERSACS data for supportability analysis would link this analysis directly to the best source of manpower change information--the program force structure developed in the TAA-POM process. Use of these data would ensure that there is no duplication of spaces traded off for a new program and would provide an audit trail of force structuring actions in the POM. Further, the PERSACS provides these data at the level of detail needed. The PERSACS must, however, be improved before it can be used for this purpose. The needed improvements are either under development now or would be relatively simple and inexpensive to accomplish. The two principal improvements needed are the inclusion of manpower requirements for new equipment and the reduction of factoring distortions. Once these improvements are made, the SSC should adopt the PERSACS as the primary source of data for supportability analyses.

APPENDIX A  
STUDY CONTRIBUTORS

1. STUDY TEAM

a. Study Director

LTC Leroy A. Babbitt, Requirements Directorate

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APPENDIX B

STUDY DIRECTIVE



REPLY TO  
ATTENTION OF  
DAPE-MBC

DEPARTMENT OF THE ARMY  
OFFICE OF THE DEPUTY CHIEF OF STAFF FOR PERSONNEL  
WASHINGTON, D.C. 20310

30 JAN 1981

SUBJECT: Study Directive, Manpower Tradeoff Methodology (MTM)

Commander  
US Army Concepts Analysis Agency  
8120 Woodmont Avenue  
Bethesda, MD 20014

1. PURPOSE. This directive establishes a study to identify systems and procedures that will provide manpower/personnel managers with information needed for determining the impact and supportability of proposed manpower tradeoff actions required to accommodate force structure and materiel system changes.

2. STUDY TITLE. Manpower Tradeoff Methodology (MTM) (Category 1: Manpower and Personnel).

3. BACKGROUND.

a. During the current period of rapid force modernization, Army manpower managers are planning for the introduction of many new materiel systems and new organizational structures. With some exceptions, the new materiel systems and organizations planned for introduction will result in increased numbers of personnel needed to operate and support the equipment or an increase in skill levels. Constraints on the Army's end strength authorizations require that manpower needed to support the introduction of new materiel organizational concepts be provided by programming concomitant manpower reductions elsewhere in the force structure and/or retraining available personnel in new skills. Retrainability of available personnel into higher skill levels is an additional factor which must be considered when planning for manpower reallocations to accommodate new systems.

b. While force structure managers (an ODCSOPS function) maintain end strength levels constant by balancing authorizations at a highly aggregated level of detail, manpower and personnel managers (an ODCSPPER function) must plan personnel reallocations at the grade, branch, military occupational specialty (MOS) and Speciality Skill Identifier (SSI) levels of detail. This planning must be accomplished sufficiently early in the materiel development process to allow manpower affordability determinations to affect acquisition and design decisions. The manpower manager must be able to input quantitative forecasts of the

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impacts of proposed manpower reallocations to the decisionmaking process. Current procedures do not provide tradeoff information to manpower/personnel/training managers which is adequate to forecast the resource implications of the introduction of new materiel systems or changes to organizations. In addition, it does not document an audit trail to insure that manpower/personnel tradeoffs are not duplicated. The proposed system must address and, if possible, solve these shortcomings.

4. STUDY SPONSOR. Deputy Chief of Staff for Personnel (DCS PER).
5. STUDY AGENCY. US Army Concepts Analysis Agency (CAA).
6. TERMS OF REFERENCE.

a. Problem. Office of the Deputy Chief of Staff for Personnel (ODCS PER) has not been able to identify manpower/personnel spaces which have been traded off in the force structure to accommodate the introduction of new materiel or changes in organizations independent of new materiel systems. Manpower, personnel and training managers need this information for determining resource impacts and supportability of these proposed tradeoff actions. Affordability analyses cannot be made without the tradeoff information identifying manpower and personnel implications.

b. Objective.

(1) Nominate appropriate systems and procedures to insure that ODCS PER is provided with information that identifies the manpower/personnel space tradeoffs which will allow determination of the manpower affordability of proposed materiel and force structure changes.

(2) Identify data that will allow manpower and personnel managers in ODCSOPS and ODCS PER to:

(a) Determine the reasonableness (accuracy) of the new requirements by grade and MOS/SSI (for military spaces - total Army).

(b) Identify and quantify the changes both in terms of total spaces (military and civilian) and the MOS/SSI and grade level of detail for military spaces only.

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(c) Assess the training, grade structure and other manpower/personnel management impacts resulting from the tradeoff actions.

(3) Define a mechanism to provide an audit trail of manpower traded off to insure the spaces given up are traded off only once.

c. Scope. The study will examine:

(1) The procedures and supporting information systems now used by force structure and manpower managers in determining, recording and communicating manpower space tradeoffs to accommodate new manpower requirements.

(2) The procedures and supporting information systems now used for assessing the affordability of new manpower requirements.

(3) The manner in which manpower tradeoff data impact on the decisionmaking process for both materiel acquisition and force structuring.

d. Limitations. The study:

(1) Will focus on the HQDA processes for determining and evaluating reallocations of manpower, military and civilian both in bulk numbers and at the MOS/SSI and grade level of detail, in TOE and TDA units both within and outside of the theater of operations.

(2) Will not examine the processes used in determining personnel requirements for new systems.

(3) Will not evaluate the combat effectiveness of alternative force structures.

(4) Will focus on manpower management (spaces) and will not examine personnel management (faces).

e. Timeframe. FY 1981.

f. Assumptions.

(1) The manpower needed to operate and support new materiel systems as stated in appropriate requirements documents are valid.

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(2) The number and composition of unit requirements stated in approved force structures are valid.

g. Essential Elements of Analysis (EEA).

(1) What are the various types of changes which drive manpower reallocations? What are their sources and when do they occur?

(2) When and where are manpower authorization tradeoffs identified for each of the various types of changes?

(3) What are the procedures for providing manpower tradeoff data to ODCS PER for affordability assessments?

(4) What data are required by ODCS PER to perform required affordability assessments?

(5) What synchronization is required between the processes for generating and approving changes and the processes for managing manpower? Does it exist?

7. SUPPORT AND RESOURCE REQUIREMENTS.

a. ODCS PER will appoint a study coordinator.

b. ODCS PER will provide information on the processes which occur from receipt of new manpower requirements through manpower tradeoff decisions.

c. ODCSOPS and other HQDA staff agencies will provide information as required and requested by ODCS PER or CAA.

d. CAA will designate a study director and establish a full time study group.

e. CAA will provide any required programing and ADP support for the conduct of the study.

f. CAA is authorized direct communication with Army staff agencies and major commands.

8. LITERATURE SEARCH.

a. All POC identified by HQDA, MILPERCEN, and the Soldiers Support Center (National Capital Area) will be contacted for

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background information. Interviews will be scheduled with representatives of organizations associated with force development and manpower management processes.

b. The following studies should be examined during the research effort.

(1) Study Report CAA-SR-79-6, Management Analysis of Key Resource Operations (MAKRO), March 1979.

(2) Study Report CAA-SR-80-5, Implementation of Change (IC), June 1980.

(3) Study Report, General Research Corporation Report 1161-01-80-CR, Identification of Manpower Requirements for New Systems and Incorporation of the Requirements into the Personnel Structure and Composition System (PERSACS).

(4) Soldier Support Center (NCR) - Functional Review.

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c. AR 71-2, 19 April 1976, Basis of Issue Plans.

d. AR 470-4, November 1975, Manpower Management.

e. AR 611-1, 27 April 1976, Military Occupational Classification Structure Development and Implementation.

f. CSR 11-1, 25 Nov 1975, the Planning, Programming and Budgeting System.

g. CSR 11-13, 21 February 1978, Army Five Year Defense Program.

h. CSR 11-9, 26 April 1976, Policy for Resource Support of DA Directed Program Changes.

i. AR 71-11, 15 Apr 1980, Force Development Total Army Analysis (TAA).

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j. The Army Force Programer's Handbook, 22 April 1977.

10. ADMINISTRATION.

a. Support.

(1) Funding for TDY associated with the study effort will be the responsibility of the participating organization.

(2) ADP support will be accomplished using CAA computer resources.

b. Milestones. See Inclosure.

c. Control Procedures. ODCS PER will coordinate with ODCSOPS, the Soldiers Support Center (National Capital Area) and other agencies as appropriate to develop points of contact for this study.

d. Action Documents. CAA will prepare a final report.

e. Coordination. This tasking document has been coordinated with CAA IAW AR 10-38.

FOR THE DEPUTY CHIEF OF STAFF FOR PERSONNEL:

*H. S. Long, Jr.*  
H. S. LONG, JR.  
Major General, GS  
Director of Manpower,  
Programs and Budget

STUDY SCHEDULE

1. Research current system and collect data	20 Feb 81
2. Develop descriptive model of process	13 Mar 81
3. Analyze current procedures and formulate alternatives	17 Apr 81
4. Publish study report	15 May 81

APPENDIX C  
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## GLOSSARY OF TERMS

AFPDA	Army Force Planning Data and Assumptions
ALO	Authorized Level of Organization
APDM	Amended Program Decision Memorandum
ASARC	Army Systems Acquisition Review Council
AURS	Automated Unit Reference Sheet
AUTS	automated update transaction system
BOIP	Basis of Issue Plan
CAA	US Army Concepts Analysis Agency
CACDA	Combined Arms Combat Developments Agency
CBT	combat
CCT	Consolidated Change Table
CEM	Concepts Evaluation Model
CFP	Concept Formulation Package
COEA	Cost and Operational Effectiveness Analysis
COMPLIP	Computation of Manpower Programs Using Linear Programing
CS	combat support
CSR	Chief of Staff Regulation
CSS	combat service support
DCP	Decision Coordinating Paper
DEP	delayed entry program
DOD	Department of Defense
DSARC	Defense Systems Acquisition Review Council
EDATE	effective date

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EEA	essential element(s) of analysis
ELIM	Enlisted Loss Inventory Model
FAS	Force Accounting System
FASTALS	Force Analysis Simulation of Theater Administrative and Logistics Support (Model)
FBOIP	Final Basis of Issue Plan
FISO	Force Integration Staff Officer
FORSCOM	US Army Forces Command
FQQPRI	Final Qualitative and Quantitative Personnel Requirements Information
FSA	Force Structure Allowance
IC	Implementation of Change
IOC	Initial Operating Capability
IPR	In-Process Review
LCSMM	Life Cycle System Management Model
LIN	line item number
LOA	Letter of Agreement
LOGSACS	Logistic Structure and Composition System
MAA	mission area analysis
MACOM	Major Army Command
MAKRO	Management Analysis of Key Resource Operations
MAP	Manpower Analysis Paper
MENS	Mission Element Need Statement
M-force	master force
MILPERCEN	US Army Military Personnel Center
MOC	Management of Change

MOS	Military Occupational Specialty
MOU	Memorandum of Understanding
MRIS	Modernization Resource Information Submission
MTM	Manpower Trade-off Methodology
MTOE	Modification Table of Organization and Equipment
ODCSLOG/ DCSLOG	Office of the Deputy Chief of Staff for Logistics
ODCSPER/ DCSPER	Office of the Deputy Chief of Staff for Personnel
ODCSOPS/ DCSOPS	Office of the Deputy Chief of Staff for Operations and Plans
OSD	Office of the Secretary of Defense
PARR	Program Analysis and Resource Review
PDIP	Program Development Increment Package
PDM	Program Decision Memorandum
PEM	Phased Equipment Modernization
PERSACS	Personnel Structure and Composition System
POM	Program Objective Memorandum
PPBS	Planning, Programming, and Budgeting System
QQPRI	Quantitative and Qualitative Personnel Requirements Information
SACS	Structure and Composition System (see LOGSACS, PERSACS)
SSC	Soldier Support Center
SSI	specialty skill indicator
TAA	Total Army Analysis
TAADS	The Army Authorization Document System

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TAEDP	Total Army Equipment Distribution System
TBOIP	Tentative Basis of Issue Plan
TDA	Table of Distribution and Allowances
TOE	Table of Organization and Equipment
TQQPRI	Tentative Qualitative and Quantitative Personnel Requirements Information
TRADOC	US Army Training and Doctrine Command
TRANSMO	Transportation Model
UDS	Unit Data System
UIC	Unit Identification Code
USAMSSA	US Army Management Systems Support Agency

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